Vol. 1072 Number 3

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

Route to:

PATENTS

November 18, 1986

U.S.
DEPARTMENT
OF COMMERCE

Patent
and
Trademark
Office

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

November 18, 1986 Volume 1072 Number 3

CONTENTS

	Page
Patent and Trademark Office Notices	
Patent Cooperation Treaty (PCT) Information	1072 OG 16
Notice of Maintenance Fees Payable	1072 OG 16
Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees	1072 OG 16
Reissue Applications Filed	1072 OG 17
Requests for Reexaminations Filed	1072 OG 17
Erratum	1072 OG 17
Notice of Examination for Registration Tues. Apr. 7, 1987	1072 OG 17
Extension of Time for Filing Notices of Opposition to Marks Published in the Official Gazette Dated Oct. 14, 1986	1072 OG 18
Service by Publication	1072 OG 18
Patent Certificates of Correction	1072 OG 20
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	1072 OG 21
Condition of Patent Applications	1072 OG 22
Reexaminations	877
Reissue Patents Granted (32,287)	879
Plant Patents Granted (5,800)	881
Patents Granted	
General and Mechanical (4,622,696)	883
Chemical (4,623,356)	1113
Electrical (4,623,751)	1223
Design Patents Granted (286,700)	1317
Index of Patentees	PI 1
Indices of Reissue, Reexamination, Design and Plant Patentees	PI 51
Classification of	
Patents (Including Reissues and Reexaminations)	PI 55
Designs and Plants	PI 58
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 59
Designs and Plants	PI 60
Change of Address Form and Subscription Order Form	Back Page

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.
THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.
GENERAL INFORMATION concerning PATENTS.
GENERAL INFORMATION concerning TRADEMARKS.

COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.50 each; PLANT PATENTS in color, $6.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Certain domestic PCT fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office was changed as of Nov. 1, 1986 and was announced in the *Official Gazette* at 1071 O.G. 22 on Oct. 21, 1986.

International PCT fees were changed due to differences in the exchange rate effective Nov. 1, 1986 and were announced in the *Official Gazette* at 1071 O.G. 22 on Oct. 21, 1986.

The current schedule of PCT fees is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office as Searching Authority	
—No corresponding prior U.S. national application filed:	420.00
—Corresponding prior U.S. national application filed:	250.00
European Patent Office as Searching Authority	
if paid before Nov. 1, 1986	930.00
if paid on or after Nov. 1, 1986	1015.00
International fees	
Basic fee (first 30 pages):	
if paid before Nov. 1, 1986	375.00
if paid on or after Nov. 1, 1986	430.00
Basic Supplemental fee (for each page over 30):	
if paid before Nov. 1, 1986	7.00
if paid on or after Nov. 1, 1986	8.00
Designation fee for the first 10 national or regional offices:	
if paid before Nov. 1, 1986	90.00
if paid on or after Nov. 1, 1986	105.00
Designation fee for 11th and subsequent designations:	No charge

DONALD J. QUIGG,
Assistant Secretary and Commissioner of Patents and Trademarks.

Sept. 30, 1986.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Nov. 15, 1983, for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,414,691 through 4,416,024
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 225.00
By other than a small entity . . . . . $ 450.00"

The amounts of the surcharges as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 55.00
By other than a small entity . . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98–622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the pa-

tent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED AUGUST 31, 1986, DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,346,496	06/271,782	8/31/82
4,346,499	06/234,652	8/31/82
4,346,522	06/244,540	8/31/82
4,346,536	06/222,690	8/31/82
4,346,547	06/248,264	8/31/82
4,346,569	06/218,800	8/31/82
4,346,578	06/218,353	8/31/82
4,346,588	06/218,341	8/31/82
4,346,591	06/295,025	8/31/82
4,346,612	06/248,934	8/31/82
4,346,641	06/234,462	8/31/82
4,346,647	06/236,624	8/31/82
4,346,674	06/235,667	8/31/82
4,346,706	06/239,474	8/31/82
4,346,707	06/248,484	8/31/82
4,346,708	06/255,353	8/31/82
4,346,719	06/259,855	8/31/82
4,346,727	06/261,332	8/31/82
4,346,731	06/267,130	8/31/82
4,346,738	06/271,886	8/31/82
4,346,771	06/281,303	8/31/82
4,346,780	06/282,170	8/31/82
4,346,782	06/239,848	8/31/82
4,346,833	06/248,996	8/31/82
4,346,841	06/224,696	8/31/82
4,346,862	06/230,768	8/31/82
4,346,869	06/242,848	8/31/82
4,346,889	06/230,615	8/31/82
4,346,896	06/232,373	8/31/82
4,346,903	06/245,095	8/31/82
4,346,926	06/284,418	8/31/82
4,346,979	06/237,664	8/31/82
4,347,045	06/242,242	8/31/82
4,347,067	06/263,538	8/31/82
4,347,081	06/296,872	8/31/82
4,347,085	06/256,856	8/31/82
4,347,115	06/259,721	8/31/82
4,347,130	06/247,322	8/31/82
4,347,133	06/270,741	8/31/82
4,347,134	06/298,858	8/31/82
4,347,136	06/235,607	8/31/82
4,347,137	06/274,541	8/31/82
4,347,144	06/318,860	8/31/82
4,347,156	06/233,337	8/31/82
4,347,221	06/239,614	8/31/82
4,347,274	06/228,356	8/31/82
4,347,276	06/251,769	8/31/82
4,347,280	06/281,511	8/31/82
4,347,324	06/264,116	8/31/82
4,347,345	06/319,210	8/31/82
4,347,359	06/225,446	8/31/82
4,347,438	06/241,674	8/31/82
4,347,464	06/239,724	8/31/82
4,347,561	06/217,406	8/31/82
4,347,577	06/216,723	8/31/82

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,215,844, Re. S.N. 873,732, Filed June 12, 1986, Cl. 251/28, VALVE ACTUATOR SYSTEM, Stanley Bowen, Owner of Record: *The Babcock & Wilcox Co., New York, N.Y.,* Attorney or Agent: Vytas R. Matas, et al., Ex. Gp.: 345

4,456,122, Re. S.N. 868,957, Filed May 30, 1986, Cl. 206/45.34, PACKAGE AND DISPLAY SYSTEM, John D. Kalal, Owner of Record: *Schott International, Inc., Akron, Ohio,* Attorney or Agent: Perry R. Taylor, Ex. Gp.: 241

4,472,832, Re. S.N. 909,319, Filed Sept. 19, 1986, Cl. 364/513.5, DIGITAL SPEECH CODER, Bishnu S. Atal, et al., Owner of Record: *Bell Telephone Laboratories, Inc., Murray Hill, N.J.,* Attorney or Agent: J. P. McDonnell, Ex. Gp.: 237

4,473,559, Re. S.N. 910,895, Filed Sept. 23, 1986, Cl. 424/195.1, METHOD AND COMPOSITION FOR RETARDING RED BLOOD CELL SICKLING, Larry H. Robinson, Owner of Record: *Inventor,* Attorney or Agent: Donald Gunn, et al., Ex. Gp.: 125

4,528,944, Re. S.N. 911,882, Filed Sept. 26, 1986, Cl. 119/29, ANIMAL EXERCISING HARNESS, Robert C. Reed, et al., Owner of Record: *Inventor,* Attorney or Agent: La Valle D. Ptak, Ex. Gp.: 333

4,541,496, Re. S.N. 884,728, Filed July 10, 1986, Cl. 177/211, MEASUREMENT CIRCUIT FOR LOAD CELL MASS COMPARATOR, Howard P. Layer, Owner of Record: *Frazier Precision Instrument Co., Inc., Gaithersburg, Md., Holometrics, Inc., Deerwood, Md.,* Attorney or Agent: James G. O'Boyle, et al., Ex. Gp.: 216

4,546,128, Re. S.N. 904,675, Filed Sept. 8, 1986, Cl. 523/222, COMPOSITE MATERIAL COMPOSITIONS USING WASTE SYNTHETIC FIBER, Yoshikazu Nakajima, Owner of Record: *Kabushiki Kaisha Mikuni Seisakusho, Tokyo, Japan,* Attorney or Agent: Charles O. Marshall, Jr., Ex. Gp.: 151

4,586,732, Re. S.N. 906,970, Filed Sept. 15, 1986, Cl. 285/12, CONNECTOR FOR LIQUID CHROMATOGRAPHY DEVICES, James M. Anderson, Owner of Record: *Alltech Associates, Inc., Deerfield, Ill.,* Attorney or Agent: Wm. Marshall Lee, et al., Ex. Gp.: 351

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

No Publications This Issue.

Erratum

"All reference to Patent No. 4,617,747 to Richard A. Thorud of Bloomington, Minn., for SINGLE STAGE SNOWTHROWER, appearing in the Official Gazette of Oct. 21, 1986 should be deleted since no patent was granted."

Notice of Examination for Registration Tuesday, Apr. 7, 1987

Pursuant to the provisions of 37 C.F.R. §§10.5, 10.6 and 10.7, an examination for persons seeking registration before the United States Patent and Trademark Office as patent attorneys and agents will be held on *Tues., Apr. 7, 1987.* The deadline for filing applications along with the

$250 fee and all necessary showings required by 37 CFR §§7(a) and (b) is *Jan. 31, 1987.*

With the exception of those persons who actively served four years in the examining corps of the Patent and Trademark Office for whom the examination is waived, all persons recognized for practice before the Patent and Trademark Office in patent cases must pursuant to the noted rules, pass the examination. Note: those passing the examination do not qualify for recognition for practice before the Patent and Trademark Office in trademark cases. Recognition for practice in trademark cases is governed by 37 C.F.R. §10.14, which does not require the passing of an examination.

37 C.F.R. §10.6(d) provides, in part, that, "[A]ny officer or employee of the United States who is disqualified by statute (18 U.S.C. 203,205) from practicing as an attorney or agent in proceedings or other matters before Government departments or agencies, may not be registered to practice before the Office... [but,] an officer or employee whose official duties require the preparation and prosecution of applications for patent and who fulfills the requirements of... [Part 10 of 37 CFR] may be registered to practice before the Office to the extent necessary to carry out his or her official duties." If a person is an officer or employee of the United States who is not disqualified for registration under 37 C.F.R. §10.6(d) when that person applies to take the examination, that person's application for registration *must* be accompanied by his or her supervisor's *verified statement* that his or her official duties as a United States officer or employee require him or her to prepare and prosecute applications for patent. If, after applying, a person becomes an officer or employee of the United States, and is not disqualified for registration under 37 C.F.R. §10.6(d), that person must submit the same verified statement from his or her supervisor, preferably promptly upon his or her employment.

If a person who is an officer or employee of the United States is disqualified from registration under 37 C.F.R. §10.6(d) at the time he or she applies for admission to the examination, or becomes so disqualified after applying, but before he or she is registered, registration of such person will be subject to the following conditions:

1. If the person is serving in the patent examining corps of the Patent and Trademark Office (PTO) or as a law clerk or technical advisor in the Court of Appeals for the Federal Circuit (CAFC) and passes the examination, that person will not be registered so long as he or she remains employed by the PTO or CAFC. However, if within one (1) year from the date of termination of employment with the PTO or CAFC, that person's status changes and he or she is no longer disqualified under 37 CFR §10.6(d), that person will be considered eligible for registration upon satisfactory proof of his or her change in status. If that person has not become registered within one (1) year from the date of termination of employment with the PTO or CAFC, that person may not become registered thereafter except upon taking and passing another regularly scheduled examination unless such person has served more than four years in the examining corps of the PTO.
2. If the person passes the examination and is employed by the U.S. Government in an agency or branch other than the PTO or CAFC, that person will not be registered so long as he or she remains disqualified for registration under 37 CFR §10.6(d). However, if within one (1) year from the date notification of passing the examination is mailed, that person's status changes and he or she is no longer disqualified under 37 CFR §10.6(d), that person will be considered eligible for registration upon satisfactory proof of his or her change in status. If a person has not become registered within one (1) year from the date notification of passing the examination is mailed, that person may not become registered thereafter except upon taking and passing another regularly scheduled examination.

Under 37 CFR §10.7(b), persons seeking registration must submit "satisfactory proof of good moral character and repute and of sufficient basic training in scientific an technical matters...." The initial submissions of many persons not having degrees in physics, chemistry and engineering are inadequate, and often they must be supplemented before such persons are approved to take the examination. To afford adequate time to present a satisfactory supplemental showing, it is recommended that persons file their applications early, preferably *at least two months* before the Jan. 31, 1987 deadline. All supplemental showings of qualifications and all applications received after Jan. 31, 1987 will be considered only in connection with their admission to the next succeeding examination.

The examination will be given under the supervision of the Office of Personnel Management and may be taken at specific locations in which the Office of Personnel Management conducts examinations.

Application blanks may be obtained from the Office of Enrollment and Discipline, Suite 810, Crystal Park 1, 2011 Crystal Dr., Arlington, Va. or by mail addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, and directed to the attention of the Office of Enrollment and Discipline.

CAMERON WEIFFENBACH,
Oct. 21, 1986. *Director, Office of Enrollment and Discipline.*

Extension of Time for Filing Notices of Opposition to Marks Published in the Official Gazette Dated Oct. 14, 1986

Copies of the Trademark Official Gazette dated Oct. 14, 1986 were not mailed until Oct. 20, 1986. Therefore, for marks published in the Trademark Official Gazette dated Oct. 14, 1986, Notices of Opposition filed by Nov. 19, 1986 will be considered timely.

MARGARET M. LAURENCE,
Oct. 23, 1986. *Assistant Commssioner for Trademarks.*

Service by Publication

A petition to cancel each of the registrations identifed below having been filed, and the notice of such proceedings sent by registered mail to each registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

Laher Spring & Electric Car Corp., Oakland, Calif., Reg. No. 525,065, for the mark "BRAKE-MASTER", Canc. No. 15,796.

Variety Manufacturing & Engineering Co., Inc., Chicago, Ill., Reg. No. 898,082, for the mark "FULTON WINDOR", Canc. No. 15,845.

ERMA S. BROWN,
Administrator of the Trademark Trial and Appeal Board.
For MARGARET M. LAURENCE,
Assistant Commissioner for Trademarks.

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by registered mail to each registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives shall enter an appearance within thirty days from the date of this publications, the cancellation will be proceeded with as in the case of default.

Faces, Inc., Pompano Beach, Fla., Registration No. 1,153,569, for the mark "FACES AND DESIGN", Cancellation No. 15,623.

Carter Lighting, Inc., New York, N.Y., Registration No. 1,152,737, for the mark "LIGHT BULBS UNLIMITED", Cancellation No. 15,730.

ERMA S. BROWN,
Administrator
of the Trademark Trial
and Appeal Board.
For MARGARET M. LAURENCE,
Assistant Commissioner
for Trademarks.

PATENT NOTICES

Certificates of Correction for the Week of Nov. 18, 1986

B1. 3,650,357	4,559,323	4,582,324	4,597,440
D. 280,760	4,560,263	4,582,644	4,597,552
D. 284,298	4,560,537	4,583,276	4,597,806
4,268,395	4,560,698	4,583,328	4,597,888
4,277,996	4,563,434	4,583,718	4,599,396
4,413,668	4,563,565	4,584,674	4,599,475
4,441,020	4,563,618	4,585,710	4,600,563
4,443,540	4,564,018	4,585,717	4,600,595
4,454,046	4,566,701	4,585,780	4,600,719
4,466,363	4,566,744	4,585,799	4,600,802
4,466,807	4,567,510	4,586,359	4,601,008
4,500,707	4,568,633	4,586,743	4,601,428
4,501,608	4,569,870	4,586,948	4,602,018
4,516,710	4,570,385	4,587,026	4,602,023
4,524,560	4,571,241	4,587,098	4,602,709
4,533,614	4,571,337	4,589,790	4,602,990
4,534,596	4,572,512	4,589,939	4,603,571
4,537,140	4,574,213	4,590,510	4,604,929
4,538,637	4,574,857	4,590,920	4,604,969
4,539,426	4,575,396	4,591,824	4,605,353
4,539,506	4,575,529	4,591,960	4,605,366
4,541,334	4,575,628	4,592,319	4,605,505
4,541,420	4,575,652	4,592,480	4,605,644
4,542,484	4,575,655	4,592,815	4,606,012
4,543,398	4,575,710	4,593,929	4,606,477
4,546,354	4,576,063	4,594,328	4,606,694
4,548,748	4,576,431	4,594,357	4,607,216
4,549,045	4,576,901	4,594,386	4,607,589
4,549,219	4,577,223	4,594,416	4,608,078
4,551,474	4,577,305	4,594,544	4,608,159
4,552,765	4,579,538	4,594,836	4,608,297
4,553,215	4,580,133	4,595,035	4,608,715
4,556,915	4,580,435	4,595,456	4,609,646
4,557,987	4,580,552	4,595,800	4,610,679
4,558,005	4,580,830	4,595,933	4,610,842
4,558,006	4,581,300	4,596,290	4,611,719
4,558,033	4,581,348	4,596,633	
4,558,974	4,581,740	4,597,084	
4,559,227	4,582,146	4,597,415	

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage Municipal Libraries	(907) 264-4481
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7609
Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
California	Irvine: University of California, Irvine Library	(714) 856-7234
	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 730-7290
Colorado	Denver Public Library	(303) 571-2122
Connecticut	New Haven: Science Park Library	(203) 786-5000
Delaware	Newark: University of Delaware Library	(302) 451-2965
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami–Dade Public Library	(305) 375-2665
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis–Marion County Public Library	(317) 269-1741
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4284
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-7040
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1227
	The Free Library	(215) 686-5330
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2371
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
	Nashville: Vanderbilt University Library	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: Virginia Commonwealth University Library	(804) 257-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF September 30, 1986

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	6-07-85
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	2-24-84
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-01-85
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	5-15-85
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	10-09-84
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	6-01-84
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	3-26-84
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—TRYGVE M. BLIX, Director	6-12-85
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—EDWARD E. KUBASIEWICZ, Director	2-21-84
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	7-25-84
DESIGN, GROUP 290—K. L. CAGE, Director	6-04-84
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	2-19-85
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	4-08-85
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	5-21-84
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	6-03-85
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	3-03-86

Expiration of patents: The patents within the range of numbers indicated below expire during September 1986, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents . . . . . Numbers 3,464,063 to 3,470,563, inclusive

Plant Patents . . . . . Numbers 2,918 to 2,926 inclusive

REEXAMINATIONS

NOVEMBER 18, 1986

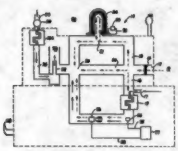
Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,128,458 (591st)

COMBUSTIBLE ELEMENT AND OXYGEN CONCENTRATION SENSOR

Joseph O. Obiaya, 4773 Walford, #13, Warrensville Heights, Ohio 44128

Reexamination Request No. 90/000,449, Sep. 26, 1983.
Reexamination Certificate for Patent No. 4,128,458, issued Dec. 5, 1978, Ser. No. 845,049, Oct. 25, 1977.
Int. Cl.[4] G01N *27/46*
U.S. Cl. 204—427



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1–5 and 7–11 are cancelled.

Claim 6 is determined to be patentable as amended.

New claim **12** is added and determined to be patentable.

6. The combustible fluid and oxygen concentration analyzer of claim **4** where said oxygen concentration analyzer comprises:

a. a reactor member;

b. a heater element, *configured in the form of a mesh structure,* embedded within said reactor member; and

c. a base for mounting said reactor member;

d. said reactor member comprising:

i. an electrolyte with oxygen ion vacancies providing paths for oxygen ion conduction;

ii. a first and second conductive electrode for inducing a voltaic reaction within said source, and

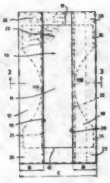
iii. means for connecting said first and second conductive electrodes to external means for measuring the voltage difference created in said electrodes by said voltaic reaction.

B1 4,490,148 (592nd)

PROTECTOR AGAINST INCONTINENCE OR DIAPER

Bo Beckeström, Vällingby, Sweden, assignor to Landstingens Inkopscentral, LIC, ekonomisk forening, Solna, Sweden

Reexamination Request No. 90/000,927, Dec. 20, 1985.
Reexamination Certificate for Patent No. 4,490,148, issued Dec. 25, 1984, Ser. No. 440,947, Nov. 12, 1982.
Claims priority, application Sweden, Jul. 1, 1982, 8204083
Int. Cl.[4] A61F *13/16*
U.S. Cl. 604—385.2



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim 1 is determined to be patentable as amended.

Claims 2–9, dependent on an amended claim, are determined to be patentable.

1. Protector against incontinence or diaper which when extended has an essentially rectangular shape and which comprises a bottom, liquid-tight layer such as a plastic sheet, which carries an oblong absorbent body fixed to the bottom layer, the bottom layer being provided with longitudinal elastic lines such as elastic threads, bands or lines of elastic coating arranged along at least a portion of the length of the protector to gather together the protector in the free state by elastic contraction of the elastic portions and to effect elastic and sealing contact with adjacent bodily parts in the position for use, characterized in that the bottom layer is extended to the sides with side flaps which are folded in over the bottom layer *and over the longitudinal sides of the oblong absorbent body, the bottom layer being extended endwise by ends that are disposed endwise beyond the ends of the oblong absorbent body,* that said *folded over* side flaps are fastened at their end portions to *said extended ends of* the bottom layer *at locations intermediate the width of the protector,* and that the elastic lines are arranged at the free edges of the side flaps *and are each fixed at both their ends to the side flaps endwise beyond the ends of the absorbent body at locations intermediate the width of the protector.*

REISSUES

NOVEMBER 18, 1986

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

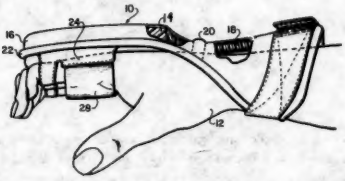
Re. 32,287
PROTECTIVE FOOTBALL GLOVE

John R. Willis, 4505 Revillo Way, San Diego, Calif. 92115

Original No. 4,400,829, dated Aug. 30, 1983, Ser. No. 337,966, Jan. 8, 1982. Application for reissue Aug. 29, 1985, Ser. No. 770,855

Int. Cl.[4] A41D *13/08*

U.S. Cl. 2—16 24 Claims



10. A protective football glove comprising:

a casing of tough pliable material for covering the back of the hand, said casing having an outer end forward of the first finger knuckles to cover the same and extending rearwardly to a point up the arm a short distance beyond the wrist;

a hand pad of resilient material in said casing, said hand pad extending rearwardly from the outer end of said casing to a point forward of the wrist for covering the back of the hand;

a wrist pad of resilient material in said casing, said wrist pad extending from a point generally adjacent the rearward end of said hand pad to a point a short distance up the arm from the wrist;

a hinging bead extending through said casing and said wrist pad to accommodate wrist flexing;

finger loops adjacent the outer end of said casing on the palm face thereof;

wrist strap means extending from one side of said casing and having quick connect means thereon; and

complementary quick connect means for adjustably connecting with said quick connect means on said wrist strap to help secure said glove on the hand.

19. A protective football glove comprising:

a casing of tough pliable material for covering the back of the hand, said casing having an outer end forward of the first finger knuckles to cover the same and extending rearwardly to a point up the arm a short distance beyond the wrist;

a hand pad of resilient material in said casing, said hand pad extending rearwardly from the outer end of said glove to a point forward of the wrist for covering the back of the hand;

a wrist pad of resilient material in said casing, said wrist pad extending from a point generally adjacent the rearward end of said hand pad to a point a short distance up the arm from the wrist;

a hinging bead between said hand pad and said wrist pad for accommodating flexing of said glove;

finger loop means adjacent the outer end of said casing;

wrist strap means extending from one side of the rearward portion of said casing and having quick connect means thereon; and

complementary quick connect means on the rearward portion of said casing for adjustably connecting with said quick connect means on said wrist strap.

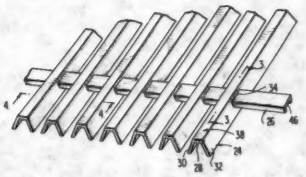
Re. 32,288
HEAT TRAPPING COOKING GRILL

Bernard B. Berger, Aiken, S.C., assignor to Ducane Heating Corporation, Columbia, S.C.

Original No. 9,131,983, Ser. No. 210,916, Nov. 28, 1980. Continuation of Ser. No. 43,863, May 29, 1979, abandoned. Application for reissue Sep. 12, 1985, Ser. No. 775,408

Int. Cl. A47J *37/08*

U.S. Cl. 99—385 32 Claims



1. A cooking grill for supporting food to be cooked over heating means for providing cooking heat, said cooking grill comprising:

a plurality of elongated channel members spaced transversely apart one adjacent to the other and each comprising a deformable sheet of heat conducting material deformed to provide a transversely and longitudinally extending base and opposing, longitudinally extending sidewalls depending from said base and diverging from each other from said base to the lower edge of each sidewall, said base being substantially flat in both said transverse and said longitudinal directions and defining a wide, substantially flat cooking surface extending transversely across and longitudinally along the upper side of said base, and said base and said opposing sidewalls defining an inverted channel pocket beneath said base, the transverse width of said channel pocket between the lower edges of said opposing sidewalls being significantly greater than the transverse width of said base and said channel pocket providing a trap for a sufficient portion of said cooking heat to cause said wide, substantially flat cooking surface to sear abutting surfaces of food supported over said heating means by said channel member;

at least one set of apertures comprised of an aperture extending through each sidewall adjacent to said substantially flat base of each of said adjacent channel members;

at least one elongated stringer passing through said at least one set of apertures and extending between the opposing sidewalls of each of said adjacent channel members; and,

securing means for securing the base of each of said channel members to said stringer extending between said opposing sidewalls so as to hold said channel members in said transversely spaced adjacent relationship.

Re. 32,289
CYANOHYDROCARBYLATED ALKOXYLATES AND GLYCERIDES

Paul R. Stapp, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

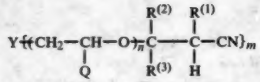
Original No. 4,455,255, dated Jun. 19, 1984, Ser. No. 371,865, Apr. 26, 1982. Application for reissue Jun. 17, 1985, Ser. No. 745,773

Int. Cl.[4] E21B *43/22, 43/24*

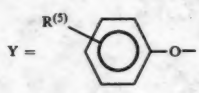
U.S. Cl. 166—273 21 Claims

1. Surfactant composition comprising

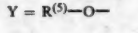
(a) a metal hydrocarbyl sulfonate
(b) a cyanohydrocarbylated alkoxy composition having the formula:



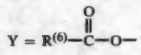
wherein m is 1 or 2, n is an integer of 1 to 40 and wherein Y has one of the following meanings:



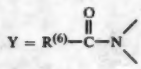
(m = 1)



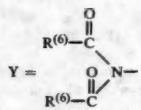
(m = 1)



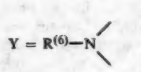
(m = 1)



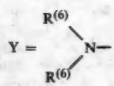
(m = 2)



(m = 1)



(m = 2)



(m = 1)

and wherein

Q is hydrogen or methyl, $R^{(1)}$, $R^{(2)}$, $R^{(3)}$, which can be same or different, are hydrogen, aryl or alkaryl radicals with 6 to 10 carbon atoms, or alkyl radicals of 1 to 5 carbon atoms, $R^{(5)}$ and $R^{(6)}$ are aryl or alkaryl radicals with 6 to [10] *20* carbon atoms or alkyl radicals with [1] *3* to [5] *21* carbon atoms.

Re. 32,290

INPUT/OUTPUT INTERCARD CONNECTOR

John C. D. Asick, Harrisburg; George H. Douty, Mifflintown; John M. Landis, Camp Hill; Clair W. Snyder, Jr., York, and James S. Staron, Millersburg, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Original No. 4,506,940, dated Mar. 26, 1985, Ser. No. 505,151, Jun. 17, 1983. Application for reissue Aug. 19, 1985, Ser. No. 766,470

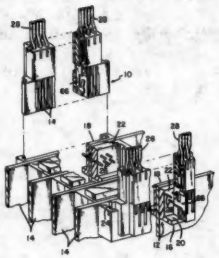
Int. Cl.[4] H01R *23/72*

U.S. Cl. 339—17 LC **11 Claims**

8. A connector system comprising

a header member having a mating face in a connector receiving cavity profiled to receive a mating connector in a direction parallel to said mating face and a plurality of contacts each with one end extending from the mating face,

a connector member comprising a housing having a front mating end profiled for reception in said cavity, a rear terminating end, and a plurality of terminal passages extending therebetween, said mating end having a mating surface for reception against said mating face, said passages opening at said mating end as a plurality of parallel slots on said mating surface and at said terminating end as a plurality of parallel channels on opposite sides of said housing, adjacent slots extending to channels on opposite sides, alternate slots extending to channels on the same side, said connector member further comprising a plurality of terminals in respective passages, each terminal having a conductor engaging portion in a respective channel for being joined to an electrical wire and a contact engaging portion in a respective slot, said slots being spaced so that each slot receives one of said ends of said respective contacts for engagement by said contact engaging portion.



Re. 32,291

SYSTEM FOR CODING INFORMATION CHANGE PICTURE ELEMENTS IN FACSIMILE SIGNAL

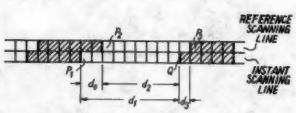
Yukio Nakagome, Yokohama; Hiroichi Teramura, Tokyo; Yasuhiro Yamasaki, Machida, and Yasushi Wakahara, Tokyo, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Original No. 4,040,093, dated Aug. 2, 1977, Ser. No. 6,11,,269, Sep. 8, 1975. Application for reissue Aug. 2, 1979, Ser. No. 62,984

Claims priority, application Japan, Sep. 9, 1974, 49-103004

Int. Cl.[4] H04N *1/415, 1/417*

U.S. Cl. 358—261 **6 Claims**



7. A system for coding information change picture elements in a facsimile signal, comprising:

input terminal means for receiving the facsimile signal;

encoder means connected to said input terminal means for encoding the absolute address of each information change picture element, having a state different from that of an immediately preceding picture element on each scanning line, in the facsimile signal in such a manner that a distance between the information change picture element and a reference information change picture element selected from information change picture elements of an immediately preceding scanning line and the scanning line to be coded is encoded by a minimum number of bits of each code word in the order of occurrence of all the information change picture elements; and

output means connected to said encoder means for obtaining a coded output pulse train from the output of said encoder means.

PLANT PATENTS

GRANTED NOVEMBER 18, 1986

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,800

FLOWERING CRAB APPLE TREE

William Flemer, III, Princeton, N.J., assignor to Treesearch, Kingston, N.J.

Filed Oct. 24, 1984, Ser. No. 664,202
Int. Cl.[4] A01H *5/03*
U.S. Cl. Plt.—34 **1 Claim**

1. A new and distinct variety of flowering Crab Apple Tree substantially as herein shown and described, characterized particularly as to novelty by the unique combination of the abundance, large size, and pure white color of its double flowers, further having extreme resistance to defoliation by Apple Scab disease as compared to other varieties of crab apple trees growing nearby, and not having any tendency to die back from Fire Blight disease even in wet summers.

5,801

CHERRY ROOTSTOCK-GM9 CULTIVAR

André Monin, Namur, and Richard Trefois, Charleroi, both of Belgium, assignors to N.V. Jo Nicolai & Co., Duras, Belgium

Filed Apr. 26, 1984, Ser. No. 603,940
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—37 **1 Claim**

1. A new and distinct cultivar of cherry tree useful as a dwarfing cherry rootstock, substantially as shown and described, obtained from a selection of a seedling by crossing *Prunus incisia* with *Prunus serrula* at De Belder Nursery, Klamthough, Belgium, with, when used as an understock, induces less growth of the cherry tree and early flowering, is graft-compatable with cultivars of *Prunus avium* and *Prunus cerasus*.

5,802

CHERRY ROOTSTOCK-GM 79 CULTIVAR

André Monin, Namur, and Richard Trefois, Charleroi, both of Belgium, assignors to N.V. Jo Nicolai & Co., Duras, Belgium

Filed Apr. 26, 1984, Ser. No. 604,141
Int. Cl. A01H *5/00*
U.S. Cl. Plt.—37 **1 Claim**

1. A new and distinct cultivar of cherry tree useful as a dwarfing, small-leaved cherry rootstock substantially as shown and described, discovered in De Belder Nursery, Kalmthout, Belgium, growing among a population of *Prunus canescens*, which, when used as an understock, induces less growth of the cherry tree, is graft-compatible with most commercial cultivars of sweet cherry trees, and provides increased fruit production of the early life of the grafted cherry tree.

5,803

CHERRY ROOTSTOCK-GM G1/1 CULTIVAR

André Monin, Namur, and Richard Trefois, Charleroi, both of Belgium, assignors to N.V. Jo Nicolai & Co., Duras, Belgium

Filed Apr. 26, 1984, Ser. No. 604,060
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—37 **1 Claim**

1. A new and distinct cultivar of cherry tree useful as a dwarfing, small-leaved cherry rootstock substantially as shown and described, discovered as a seedling among seedlings produced by open-pollination of offspring of a *Prunus dawyckensis* mother tree found growing in De Belder Nursery, Kalmthout, Belgium, which, when used as an understock, for sweet cherry trees, induces less growth of the sweet cherry tree, a semi-erect growth habit, a light canopy and early and abundant flowering and fruit setting.

5,804

IMPATIENS PLANT NAMED ZENITH

James C. Mikkelsen, Ashtabula, Ohio, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed Oct. 19, 1984, Ser. No. 663,038
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of New Guinea Impatiens plant named Zenith, as described and illustrated, and particularly characterized by its deep orange, large flowers, vigorous, self-branching mounded growth habit making it useful for pot and border plant use; relatively large glossy green leaves with a distinct toothed midrib variegation, and by its adaptability to various environments of use.

5,805

AFRICAN VIOLET PLANT NAMED IMPROVED NORTH CAROLINA

Reinhold Holtkamp, Isselburg, Fed. Rep. of Germany, assignor to Gessellschaftsvertrag uber die Ergindergemeinschaft "Optimara", Fed. Rep. of Germany

Filed Jan. 5, 1984, Ser. No. 568,440
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet plant named Improved North Carolina, as illustrated and described, and particularly characterized by its very strong and upright flower stems, each of which carries up to 15 flowers which are large and single in form and an intense red-purple in color, profuse flowering, vigorous growth habit, and by its attractive dark green leaves.

5,806

AFRICAN VIOLET PLANT NAMED ROMEO

Arnold Fischer, Hanover, Fed. Rep. of Germany, assignor to Ball Pan Am Plant Company, Parrish, Fla.

Filed Jul. 18, 1984, Ser. No. 632,109
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African Violet named Romeo, as illustrated and described, and particularly characterized by its large dark violet flowers which are semi-double in form with slightly ruffled petal margins, upright peduncles, compact habit, profuse flowering, and by its medium green, pubescent foliage.

5,807

SYNGONIUM PODOPHYLLUM PLANT CV. 'JENNY KALLERT'

Günter Kallert, 2039 N. Bay Rd., Miami Beach, Fla. 33140

Filed Jul. 8, 1985, Ser. No. 752,800
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—88 **1 Claim**

1. A new and distinct variety of Syngonium plant, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of distinctive pale green somewhat grayish color of its leaves, more compact growth habit, more round, nearly twice as long leaves and petioles than "White Butterfly" (unpatented), the leaves also being thicker and lighter green, less and different variegation where appearing, and lack of susceptibility to any known disease.

PATENTS

GRANTED NOV. 18, 1986

ERRATA

For CLASS	See PATENT NO.
053-373	4,622,793
384-053	4,623,201
414-054	4,623,301
420-041	4,623,387
525-054	4,623,484
540-092	4,623,485
514-212	4,623,486
379-080	4,623,758
379-079	4,623,759
379-232	4,623,760
379-084	4,623,761
379-393	4,623,762
357-022	4,624,004

PATENTS

GRANTED NOVEMBER 18, 1986

GENERAL AND MECHANICAL

4,622,696

UNDER HELMET HOOD FOR AIRCREW

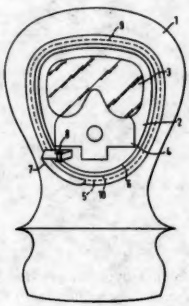
Joseph A. Griffiths, Mid Trees, Wood Road, Hindhead, Surrey, England

Filed Jul. 19, 1984, Ser. No. 632,583

Claims priority, application United Kingdom, Oct. 31, 1983, 8329024

Int. Cl.[4] A42B *3/00*

U.S. Cl. 2—6 **20 Claims**



1. An under helmet hood for aircrew comprising a head cowl which is made of an NBC resistant but relatively non-tearable rubber material, a relatively rigid face mask incorporating an optical vizor, and rip-out means enabling a portion carrying the face mask to be ripped out of the cowl in an emergency, said means including a longitudinally grooved strip of rubber material which is readily tearable along its groove and which extends around the cowl just outside the face mask to cover in alignment with its groove an exact butt joint formed between the cowl and the face mask portion which is to be able to be ripped out.

4,622,697

SKI PANTS COVER

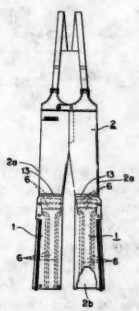
Kazuhiko Tajima, Tokyo, Japan, assignor to Phenix Co., Ltd., Tokyo, Japan

Filed Mar. 22, 1985, Ser. No. 714,753

Claims priority, application Japan, Mar. 27, 1984, 59-042691[U]

Int. Cl.[4] A41D *13/00*

U.S. Cl. 2—23 **6 Claims**



1. A ski pants cover for covering ski pants, composed of a front body and a rear body, from a knee portion to an ankle portion thereof, said ski pants cover comprising:

a knee abutting portion adapted to abut against a knee portion of the ski pants and to cover said knee portion;

a shin abutting portion connected to said knee abutting portion to abut against a shin portion of the ski pants and to cover said shin portion; and

a calf abutting portion connected to said shin abutting portion to abut against a calf portion of the ski pants when said ski cover is attached around the ski pants, said calf abutting portion having a depressed portion at the top thereof to allow free movement and bending of the knee, said shin abutting portion and said calf abutting portion being adapted to be extended to provide two vertical side edges;

said ski pants cover being provided with first engaging means at an upper portion of the knee abutting portion for attaching said knee attaching portion to a point above the knee portion in the front body of the ski pants, second engaging means at a lower portion of the knee abutting portion for attaching said shin attaching portion and the calf attaching portion at the front body and the rear body of the ski pants, and third engaging means at said outer vertical side rims for engaging said shin attaching and the calf attaching portion with each other.

4,622,698

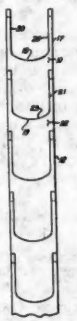
DISPOSABLE BIB

Eleanor Heyman, 23288 Morningside Dr., and Lois Nager, 22411 Twyckingham, both of Southfield, Mich. 48034

Filed Apr. 19, 1985, Ser. No. 724,840

Int. Cl.[4] A41D *27/12*

U.S. Cl. 2—49 R **8 Claims**

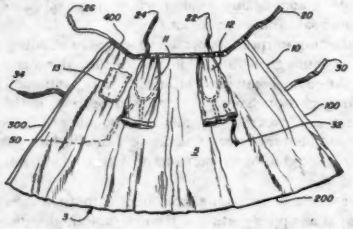


6. Disposable bib for protecting the person and clothing of a user comprising in combination a thin sheet of absorbent material having parallel side margins, a concave upper margin, a convex lower margin, a pair of spaced parallel upwardly extending straps recessed inwardly from the side margins and adjoining the end portions of the upper margins for mounting the upper portion of the bib to the user's neck and a pair of downwardly extending straps, formed by recesses inwardly of said downwardly extending straps, in the lower portions of said sheet for mounting the lower portion of the bib to the user's waist.

4,622,699
HOSPITAL GOWN

Willie Jo Spriggs, Gainesville, Ga., assignor to Hospital Corporation of Lanier, Inc., Gainesville, Ga.

Filed Dec. 26, 1984, Ser. No. 686,208
Int. Cl.[4] A41B 9/00
U.S. Cl. 2—114 **5 Claims**



1. An unhooded hospital gown consisting essentially of a substantially quadrilaterally shaped unitary body portion, adapted to be wrapped around a patient's torso and extending in length at least to said patient's knees, having

an inner, body-contacting surface,

an outer surface,

an upper edge,

first and second longitudinally extending, opposing side edges, and

a lower edge;

sleeves extending from said outer surface of said body portion, providing communication with said inner, body-contacting surface and adapted for placement of said patient's arms therethrough;

two non-metallic, elongate securing means extending outwardly and away from each of said first and second side edges,

one of each of said securing means being respectively disposed substantially at the juncture of said upper edge with each of said respective first and second side edges, so as to comprise neck portion securing means extending substantially parallel to said upper edge and outwardly and away from each of said side edges;

two non-metallic, elongate securing means extending outwardly and away from said upper edge, and being disposed about the longitudinal middle of said edge, each being adapted for securing to the opposite neck portion securing means of said first and second side edges;

at least one inner surface, non-metallic elongate securing means, extending inwardly and away from said inner, body-contacting surface of said body portion, being adapted for securing to one of said first edge elongate securing means;

at least one outer surface, non-metallic elongate securing means, extending outwardly and away from said outer surface of said body portion, being adapted for securing to one of said second edge elongate securing means; and

pocket means disposed on said outer surface of said body portion when said gown is wrapped and secured about said patient's torso.

4,622,700
SUCTION VENTILATED HELMET

James G. Sundahl, Irvine, Calif., assignor to Bell Helmets Inc., Norwalk, Calif.

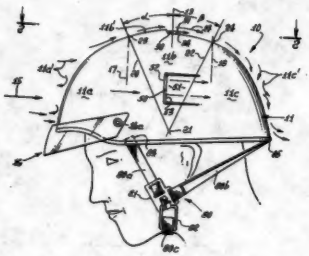
Filed Dec. 9, 1985, Ser. No. 806,512
Int. Cl.[4] A42B 3/00
U.S. Cl. 2—425 **16 Claims**

1. In a forwardly longitudinally extending cyclist's protective helmet, the combination comprising

(a) a dome shaped outer shell having a forward portion, a rearward portion, and a medial portion over which air flows substantially smoothly as the cyclist moves forwardly, said medial portion including an upper crown and laterally spaced left and right sides extending downwardly and laterally from said crown,

(b) the outer shell containing at least one opening in said medial portion, said opening facing rearwardly and bounded by elongated outer and inner edges which extend substantially laterally,

(c) the shell outer surface being inwardly deflected immediately rearwardly of said inner edge and continuing rearwardly to merge with the dome shape of said outer shell,



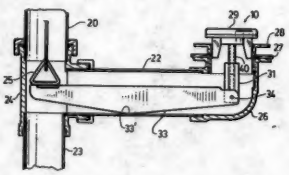
(d) whereby air flowing over said medial portion acts to aspirate air from within the helmet interior and outwardly through said opening,

(e) said medial portion of the helmet located between forward and rearward lateral vertical planes, the forward plane intersecting the helmet surface at an angle α forward of a vertical lateral plane bisecting the helmet, with α measured about an approximate center of forward and rearward curvature of the shell outer top surface, and the rearward plane intersecting the helmet surface at an angle β rearward of said vertical lateral plane, with β also measured about said center of curvature, α being about 15° and β being about 15°.

4,622,701
MECHANICAL WASTE MECHANISM

Sigurdur G. Petursson, 2169 Linby Street, Mississauga, Ontario, Canada (L4Y 1V6)

Continuation of Ser. No. 641,756, Aug. 17, 1984, abandoned. This application Sep. 26, 1985, Ser. No. 780,180
Int. Cl.[4] E03C 1/22
U.S. Cl. 4—203 **13 Claims**



1. A plumbing fixture having drainage provision comprising a drain outlet, a substantially horizontal drain tube connected to said outlet through an angled connection, said tube being located in spaced relation beneath said outlet, rocker beam having a length to extend through said horizontal drain tube, said rocker beam being of thin, deep cross-section to provide a planar section of sufficient depth so that said rocker beam cannot pass through said connection and drain outlet when said section is in a planar condition, the thickness of said planar section permitting said beam to be manually resiliently de-

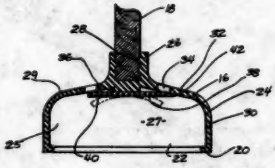
formed in a direction perpendicular to said plane in an amount sufficient for insertion through said outlet and said connection, actuator means adjacent one end of said drain tube remote from said drain outlet for cooperation with said rocker beam to displace the adjacent end of said beam to rock the beam, and a post secured to the other end of said beam and connected to a stopper located in said drain outlet, to selectively open or to permit the closure of said drain outlet upon rocking of said rocker beam, said post holding said beam in a vertical plane.

4,622,702

DRAIN PLUNGER

Kenneth A. Allen, 3912 Douglas Ave., Racine, Wis. 53402

Filed Nov. 12, 1985, Ser. No. 797,225
Int. Cl.[4] E03D *11/00*
U.S. Cl. 4—255 **20 Claims**



1. In a plunger for clearing clogged bathroom drains and the like of the type having a resiliently collapsible cap with a lip at its open lower end and a wall with an upper surface and a generally concave lower surface extending from the lip to an upper end, and a driving handle member attached thereto, the improvement comprising:

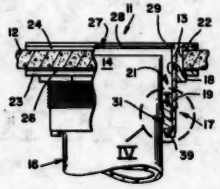
aperture means in the wall of the cup extending from the lower surface to space above the upper surface to permit flow of liquid therethrough at all times; and flexible partial occlusion means on the lower surface and secured to the cup, said occlusion means deformably movable, in response to pressure differentials, between a seated position partially occluding the aperture means and thereby permitting limited flow therethrough and an unseated position further opening the aperture means and thereby allowing substantially increased flow therethrough.

4,622,703

DRAIN FITTING WITH FRICTIONAL SEAL RETENTION

Casper Cuschera, 1047 - 77th Ave., Oakland, Calif. 94621

Filed Aug. 15, 1985, Ser. No. 765,664
Int. Cl.[4] F16J *15/02*
U.S. Cl. 4—286 **8 Claims**



1. In a drain fitting for an installation having a drain opening and a drain pipe which has an upper end positioned in coaxial relationship with the opening to receive drain flow, the combination comprising:

an externally threaded annular body proportioned to be fitted into said opening in coaxial relationship with said end of said drain pipe, said body having a flange at the upper end that is of greater diameter than said opening, at least the upper portion of said body having an inside diameter which is greater than the outside diameter of said drain pipe to provide an annular gap between said body and said drain pipe,

an annular internally threaded fastener disposed coaxially on said body and engaging said external threads thereof, said fastener having a diameter greater than the diameter of said opening in order that said body may be clamped to the rim of said opening by said fastener and said flange,

an annular resilient seal adapted to be disposed in said gap between said body and said drain pipe, said seal having an annular slot which is coaxial with said seal and which extends downwardly from the upper end surface thereof,

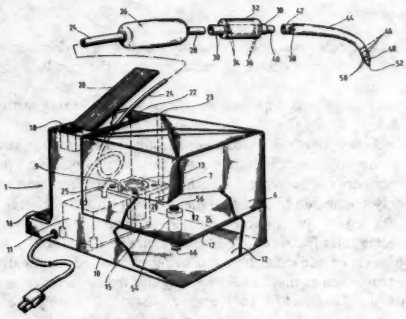
compressor member means adapted to extend into said slot of said seal to effect radial expansion continuously thereabout and form a leakproof seal with said pipe and said body, said compressor member means including a compressor member having a rigid annular sleeve portion dimensioned to be received in said slot in expansion fit fashion, said rigid annular sleeve portion including self-retention means to permit insertion into said slot and to prevent withdrawal from said slot, said last mentioned means including a lower portion of said sleeve having a barb-like annulus extending thereabout with a diameter greater than the upper portion of said sleeve portion.

4,622,704

PORTABLE HYGENIC WARM WATER JET HAVING DISPOSABLE NOZZLE TIP

Jing-Yau Chung, Houston, Tex., assignor to Health Jet, Inc., Houston, Tex.

Filed May 7, 1984, Ser. No. 607,953
Int. Cl.[4] E03D *9/08*
U.S. Cl. 4—443 **15 Claims**



1. A portable bidet comprising:

(a) a cold water reservoir for receiving a quantity of cold water, said cold water reservoir having a tubular cold water passageway extending from the bottom thereof;

(b) an enclosed warm water reservoir adapted to detachably receive said cold water reservoir thereon, said warm water reservoir having,

(i) a heating device for heating the water contained therein, and

(ii) an opening in the top of said reservoir adapted to sealably receive therethrough said tubular cold water passageway,

(iii) said inserted tubular cold water passageway extending to a point near the bottom of said warm water reservoir to permit mixing of the incoming cold water with the warm water beginning at the bottom;

(c) a breathing tube extending from said hot water reservoir to a point proximal the top of said cold water reservoir, said breathing tube permitting warm water to rise up said tube to seek the same water level as the level in said cold water reservoir, said breathing tube and said tubular cold

water passageway cooperating together to permit cold water to gravity feed into said warm water reservoir through said passageway as warm water is extracted from said warm water reservoir; and

(d) a delivery means for extracting warm water from the top of said warm water reservoir and delivering a stream of such water to the body for cleansing or medicinal purposes.

4,622,705

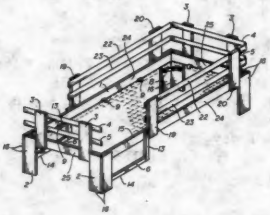
TODDLER BED CONSTRUCTION UTILIZING CRIB CONVERTER KIT

Roger D. Joubert, 500 Fontelieu Dr., New Iberia, La. 70560

Filed Mar. 5, 1985, Ser. No. 708,391

Int. Cl.[4] A47D *7/00*

U.S. Cl. 5—93 R **1 Claim**



1. In a toddler bed incorporating the spring and mattress components from a conventional baby crib, the combination comprising:

(a) a conventional rigid rectangular baby crib spring structure;

(b) a rectangular frame closely enclosing and supporting said spring structure including two side members, two end members each having a length, said end members removably connected to said side members to form a rectangle, four legs respectively connected to each corner of said rectangular frame, and four cross brackets with each cross bracket of said cross brackets being connected diagonally across each corner of said rectangular frame to serve as a diagonal support for each corner of said crib spring structure and to serve as diagonal bracing for said rectangular frame;

(c) a plurality of stabilizing bracket means connected to said side members and to said end members around the periphery of said rectangular frame and supporting said spring structure downwardly into close supporting contact with said cross brackets;

(d) a pair of side guard rail means of length less than said side members of said frame connected to extend vertically along said side members from one end of said frame;

(e) a pair of end guard rail means of length substantially the same as said end members of said frame and connected to extend vertically along the length of said end members;

(f) said side guard rail means and said end guard rail means cooperating to form a safety enclosure about said frame with two access spaces for a toddler to enter and leave said toddler's bed at one end of said bed; and

(g) two horizontal step means respectively connected to said side members and to two of said legs under said two access spaces to provide a child with the help of a step when entering said bed through either one of said access spaces.

4,622,706

AIR MAT APPARATUS

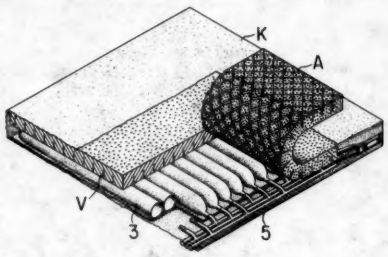
Masatoshi Takeuchi, Anan, Japan, assignor to Seiken Co., Ltd., Tokushima, Japan

Filed Sep. 21, 1984, Ser. No. 653,092

Claims priority, application Japan, Oct. 11, 1983, 58-190214

Int. Cl.[4] A47C *27/08;* **A61H** *1/00*

U.S. Cl. 5—453 **4 Claims**



1. An air mat apparatus, comprising:

a mat body having an upper surface and a plurality of defined air chambers;

an air source means for feeding air to each of the air chambers in the mat body;

a changeover valve connected between the plurality of defined air chambers in the mat body and the air source means, said changeover valve having a discharge side which is open to the atmosphere;

an air-containing elastic layer laid only on the upper surface of the mat body;

said air-containing elastic layer having such elasticity as to change its thickness when compressed by the body of a user;

said air-containing elastic layer further having therein channels which are open to the atmosphere; and

said air-containing elastic layer further having an uneven lower surface provided with a plurality of projection means, aligned alternately with the channels, for aiding in the deflation of the plurality of defined air chambers in the mat body laying thereunder.

4,622,707

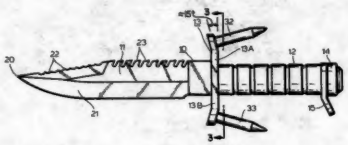
SURVIVAL KNIVES WITH GRAPPLE CAPABILITY

Charles A. Finn, Oceanside, Calif., assignor to Finn, Camphuysen, MacDonald, Schumacher, Oceanside, Calif.

Filed Apr. 17, 1985, Ser. No. 724,010

Int. Cl.[4] B25F *1/02*

U.S. Cl. 7—158 **35 Claims**



1. A knife comprising:

a blade;

a handle affixed to said blade;

at least one hook member secured to said knife with a free end angled generally toward one end of the knife for engagement with terrain or an object; and

means engaging said knife generally at the said one end of the knife for securing a line to said knife whereby said knife becomes a grapple.

4,622,708

CLOTHES WASHING MACHINES

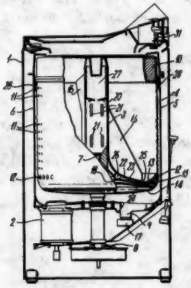
Christopher J. Gaelic, Mt. Wellington, New Zealand, assignor to Fisher & Paykel Limited, Aukland, New Zealand

Filed Feb. 26, 1985, Ser. No. 705,882

Claims priority, application New Zealand, Feb. 29, 1984, 207323

Int. Cl.[4] D06F 13/02

U.S. Cl. 8—158 10 Claims



1. A method of controlling a clothes washing machine of the type having a cabinet in which an agitator is mounted on a vertical axis and is oscillated back and forth within a perforated tub to give a washing action, the tub and the agitator rotating continuously in one direction to give a spin action and the perforated tub in turn being mounted within a watertight container in said cabinet, with a space between substantially vertical walls of the perforated tub and of the container, said method comprising the steps of causing circulation of washing liquid from a pool of washing liquid within the perforated tub in which clothes are being washed during oscillatory movement of the agitator, upwardly through at least part of said space and back to said pool of washing liquid through perforations formed in said perforated tub, said perforations being of a size and shape such that any lint in the washing liquid tends to be left in the space for eventual discharge through draining means from said container, when said pool of washing liquid is being drained from said container by actuation of said draining means.

4,622,709

CLEANING APPARATUS FOR PIPES

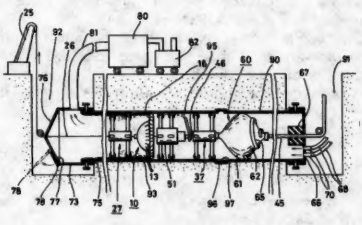
Shinichi Matsuda, 32-14, Higiriyama 1-chome, Konan-ku, Yokohama, Kanagawa 233, Japan

Filed Mar. 26, 1985, Ser. No. 715,961

Claims priority, application Japan, Apr. 16, 1984, 59-74940; Oct. 15, 1984, 59-214183

Int. Cl.[4] B08B 9/02

U.S. Cl. 15—4 1 Claim



1. A pipe cleaning apparatus comprising:

a scraping device having a plurality of scraping elements which are elongated in a radial direction relative to an axis, said scraping elements being disposed around said axis whereby radially outer portions of said scraping elements can annularly contact the interior of a pipe;

driving means for advancing said scraping device within said pipe in an advancing direction; and

a grinding device connected to, and behind, said scraping device in said advancing direction, said grinding device including:

(a) an ejection pipe rotatably supported about said axis, said ejection pipe having a radially elongated portion terminating in a nozzle,

(b) means for providing a mixture of compressed air and abrasive material to said ejection pipe for discharging from said nozzle, and

(c) means for rotating said ejection pipe.

4,622,710

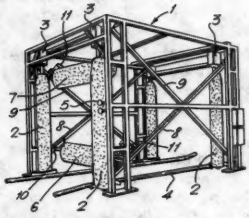
VEHICLE WASHING APPARATUS

Geoffrey Stothart, 50 Caburn Heights, Southgate West, Crawley, Sussex RH11 8SS, United Kingdom

Filed Mar. 5, 1985, Ser. No. 709,067

Int. Cl.[4] B60S 3/06

U.S. Cl. 15—53 AB 9 Claims



1. A vehicle washing apparatus having a framework defining a tunnel having an entrance and an exit through which a vehicle to be cleaned may pass, comprising:

(a) a first pair of laterally spaced tracks inclined upwardly with respect to a generally horizontal direction from the entrance to the exit;

(b) a second pair of laterally spaced tracks inclined downwardly with respect to a generally horizontal direction from the entrance to the exit such that the first and second pair of tracks cross at their approximate mid-points;

(c) a first rotatable brush supported generally horizontally on the first pair of tracks so as to traverse along the length of the first pair of tracks from an initial position adjacent the entrance to a second position adjacent the exit as the vehicle passes through the apparatus so as to wash at least a front portion of the vehicle; and

(d) a second rotatable brush supported generally horizontally on the second pair of tracks so as to traverse along the length of the second pair of tracks from an initial position adjacent the entrance above the first rotatable brush to a second position adjacent the exit as the vehicle passes through the apparatus so as to wash at least a rear portion of the vehicle.

4,622,711

ROCKER ARM WINDSCREEN WIPER SYSTEM MOUNTED ON A BLADE BY MEANS OF AN ADAPTER

Maurice F. Wattier, Sissonnes, France, assignor to Equipements Automobiles Marchall, Issy-les-Moulineaux, France

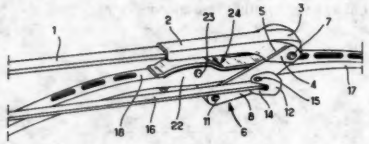
PCT No. PCT/FR83/00240, § 371 Date Jul. 17, 1984, § 102(e) Date Jul. 17, 1984, PCT Pub. No. WO84/02313, PCT Pub. Date Jun. 21, 1984

PCT Filed Nov. 30, 1983, Ser. No. 637,214

Claims priority, application France, Dec. 10, 1982, 82 20757

Int. Cl.[4] B60S 1/40

U.S. Cl. 15—250.23 17 Claims



1. Windscreen wiper system for a vehicle, in which at least one wiper arm is adapted to be oscillated with respect to a surface of a windscreen to be cleaned, a rocker arm is pivotally mounted on the wiper arm, a rocker arm control member is pivotally connected to the rocker arm and is adapted to be displaced with respect to the wiper arm during oscillation of the wiper arm, to cause the rocker arm to pivot to provide a non-circular wiping path for a wiper blade mounted on a blade holder connected to and moveable by the rocker arm, said system comprising, means mounting the rocker arm for pivotal movement about a first axis on the wiper arm, means pivotally connecting the rocker arm to said control member for pivotal movement about a second axis spaced from the first axis, a wiper blade holder, and adapter means connected to said blade holder for pivotally connecting said rocker arm to the blade holder for pivotal movement with respect to the blade holder about a third axis inwardly of the blade holder on the side of the blade holder on which the surface to be cleaned is located.

4,622,712

WIPER BLADE RUBBER

Hiroshi Sugita, Tchinomiya; Takemasa Yasukawa, Inazawa, and Masanori Aritake, Nishikasugai, all of Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Nov. 6, 1984, Ser. No. 668,859

Claims priority, application Japan, Nov. 7, 1983, 58-172904[U]; Nov. 7, 1983, 58-172905[U]; Nov. 7, 1983, 58-172906[U]; Nov. 8, 1983, 58-172711[U]; Nov. 8, 1983, 58-172712[U]

Int. Cl.[4] B60S 1/38

U.S. Cl. 15—250.36 22 Claims

1. An elongate wiper blade of a constant transverse cross section having a transverse axis, said wiper blade comprising:

a thick base portion,

a swing portion generally of a trigonal cross section, and

a neck portion interposed between said base portion and said swing portion in a series along said axis, and

a thin plate-like lip portion disposed on a free end of said swing portion;

said base portion, said swing portion and said neck portion of said rubber being composed at least mostly of a first rubber composite and said lip portion thereof including at least one external surface portion thereof which is adapted to be placed in wiping relation with a windshield being composed at least mostly of a second rubber composite, and

said first and second rubber composites existing as integrally extrusion molded and vulcanized elements, said second rubber composite being harder than said first rubber composite.

4,622,713

FLY REMOVING SYSTEM IN TEXTILE MACHINE

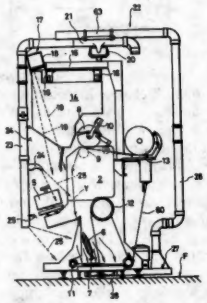
Kenji Ohashi, Uji, and Masao Uehara, Kyoto, both of Japan, assignors to Muratn Kikai Kabushi Kaisha, Kyoto, Japan

Filed Sep. 9, 1983, Ser. No. 530,193

Claims priority, application Japan, Sep. 13, 1982, 57-159124

Int. Cl.[4] A47L 5/38, 9/10, 9/20

U.S. Cl. 15—312 R 6 Claims



1. A fly removing system in a textile machine wherein an air curtain is formed by air ejected from a compressed air supply source and flies are conducted to a lower portion of textile machine, comprising:

a plurality of winding units;

a fly collector means mounted at the lower portion of each of the winding units, said fly collecting means comprising a fly collector box and a scrape-up means for scraping up flies deposited on an upper surface of the collector box and storing the scraped-up flies as fly lumps;

a cleaner means having a suction pipe for sucking and storing said fly lumps, said cleaner means disposed adjacent to and adapted to travel along said plurality of winding units while sucking in the fly lumps and discharging the stored fly lumps into a fixed dust box in a predetermined position of its traveling path;

wherein said fly collector means further includes a fan means disposed below the collector box; and

wherein said collector box has a depth sufficient to produce a downward suction air current therein and a wire net which is of a fine mesh not passing flies therethrough extends along the untis to constitute the upper surface of the collector box.

4,622,714

FLUID STRIPPING APPARATUS

Anthony J. Tomasello, Allison Park, Pa., assignor to Sherman Industries, Inc., Palmyra, N.J.

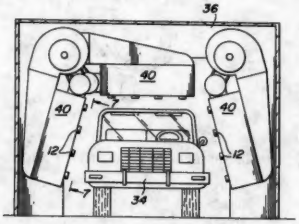
Filed Apr. 19, 1985, Ser. No. 725,041

Int. Cl.[4] B60S 3/04

U.S. Cl. 15—316 R 14 Claims

1. A nozzle having an inlet, an elongated body portion and

an outlet, the body portion tapering longitudinally from the inlet toward the outlet and terminating in a straight section adjacent the outlet, the transverse cross-section of the body portion being generally circular at all points along the longitudinal axis of the nozzle, the diameter of the inlet being approxi-



mately three times larger than the diameter of the outlet, the straight portion having a diameter approximately equal to the diameter of the outlet and a length approximately six-tenths the diameter of the outlet, the overall length of the nozzle being approximately four times the diameter of the outlet.

4,622,715

FRICTION SUPPORTING STAYS FOR WINDOWS

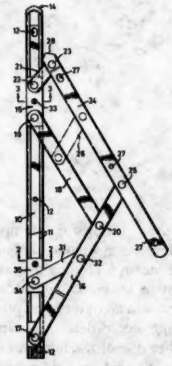
John E. Buckley, Tewkesbury, England, assignor to Securistyle Limited, Nottingham, England

Filed Nov. 21, 1984, Ser. No. 673,658

Claims priority, application United Kingdom, Nov. 24, 1983, 8331411

Int. Cl.[4] E05D 7/12

U.S. Cl. 16—370 8 Claims



1. A friction supporting stay for a window of the kind comprising a track, a slider movable along the track, a strut pivotally connected to the track, a brace pivotally connected between the slider and the strut, a link pivotally connected to the slider, and a bar pivotally connected to the link and to the strut, the arrangement being such that as the slider moves along the track the bar can swing from a position overlying the track to a position where it is angled with respect to the track, in which an additional link is provided between the track and the strut adapted to provide extra support for the downwardly acting weight of a window supported by the stay and comprising an additional slider, in which the extra link is pivoted at one end to the strut and at the other end to the additional slider which is engaged in the track.

4,622,716

DOOR-RELATED HINGE PART FOR A CABINET HINGE

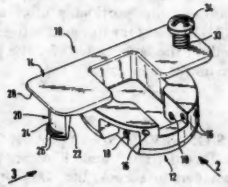
Gerhard Lautenschläger, Brensbach, Fed. Rep. of Germany, assignor to Karl Lautenschlager KG Mobelbeschlagfabrik, Reinheim, Fed. Rep. of Germany

Filed Aug. 30, 1985, Ser. No. 771,631

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1984, 3431999

Int. Cl.[4] E05D 5/02

U.S. Cl. 16—384 9 Claims



1. A door-related hinge part for a cabinet hinge, comprising: an insert cup having a cup portion to be set in a mortise in a door, a mounting flange integral with and extending from an upper portion of the cup part on opposite sides with respect to a longitudinal central axis of the cup part, a fastening stud projecting substantially at right angles to said flange from a bottom portion thereof for engaging a bore adjacent the mortise in the door, said fastening stud having a substantially circular cross section in a portion immediately adjacent the bottom portion of the flange, then tapering slightly to a free end remote from the flange over about half of its circumference on the side thereof facing the cup part, while the opposite side of the stud defines a semicylindrical surface; the bottom portion of the mounting flange adjacent the fastening stud having a ramp surface beginning at a line running approximately centrally through the fastening stud in a plane at right angles to the directrix of the side of the fastening stud facing the cup part; and on the semicylindrical side of the fastening stud facing away from the cup part at least one radially projecting, knife-edged projection.

4,622,717

PORTIONING MACHINE TO FILL MOLDS WITH PLASTIC FOOD MATERIAL AND USE OF SAME

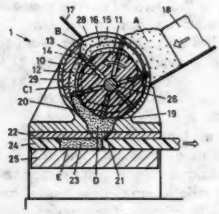
Rudolf Bollinger, Brunnen, Switzerland, assignor to Hollymatic AG. Ingenbohl, Switzerland

Continuation of Ser. No. 448,076, Dec. 9, 1982, abandoned. This application Sep. 9, 1985, Ser. No. 773,856

Claims priority, application Switzerland, Dec. 10, 1981, 7907/81

Int. Cl.[4] A22C 7/00

U.S. Cl. 17—32 16 Claims



1. Portioning machine to fill mold with plastic food material such as ground meat and the like with a hopper (17) to hold a material supply, a feeding channel (19,20) to feed the material to a mold filling place (23) and with a compression system (1) between the hopper and the feeding channel the characteristic

of which is that the compression system is equipped with an almost circular cylindrical housing (10) having an inner wall, eccentrically arranged rotary piston (11) with several radially adjustable flat rams (13) and a fixed control disc to set the radial position of the rams (13) depending on the angle of the rotary piston (11) and that the feeding channel (19,20) is also a compression chamber (20) and also has a control system (27) to drive the rotary piston (11) which either starts or stops the piston (11) from rotating depending on the pressure of the material in the compression chamber so that the material being filled into a mold is at a substantially constant pressure during the filling of the mold; the portioning machine including at least one insert (29) to adjust the distance between the ram (13) and the inner wall of the housing (10) for the gradual adjustment of pressure on the material.

4,622,718

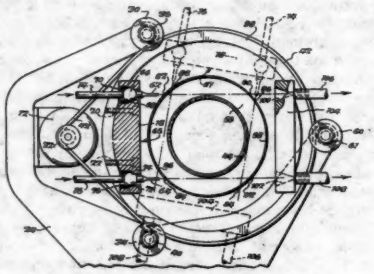
METHODS OF SEVERING SAUSAGE CASINGS

Ronald P. Glanz, Danville, and Gerald E. Miner, Jr., St. Joseph, both of Ill., assignors to Teepak, Inc., Oak Brook, Ill.

Filed Jul. 16, 1984, Ser. No. 630,919

Int. Cl.[4] B26F *3/00*; A22C *21/00*

U.S. Cl. 17—49 **3 Claims**



1. A method of severing a tubular food casing during a shirred process, said method comprising the steps of mounting at least a portion of the casing on a shirring mandrel where said casing is inflated, and impinging a plurality of high pressure streams of aqueous liquid against said casing in planes which are transverse to the longitudinal axis of the casing while moving the streams laterally or rotationally about the axis of the casing, said streams simultaneously severing said casing at multiple locations without striking the mandrel.

4,622,719

CLAMP FOR HOSES AND THE LIKE

Jörgen S. Rasmussen, Hammersbach, and Heinz Sauer, Ronneburg, both of Fed. Rep. of Germany, assignors to Rasmussen GmbH, Maintal, Fed. Rep. of Germany

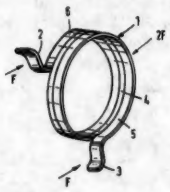
Filed Jul. 19, 1984, Ser. No. 632,543

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1983, 3327386

Int. Cl.[4] B65D *13/04*

U.S. Cl. 24—20 R **11 Claims**

1. An annular clamp for hoses and like objects, said clamp being adapted to assume an expanded and an unexpanded condition and comprising a springy member forming at least one and a half neighboring convolutions having in the unexpanded condition of the clamp inner diameters which are smaller than the outer diameter of the object around which the convolutions are to be applied, said springy member including two substantially radially outwardly bent end portions, a median portion and two intermediate portions each connecting said median portion with a different one of said end portions, said median portion having a cross-sectional shape which deviates from the cross-sectional shapes of said immediate portions such that the moments of resistance of said immediate



portions exceed the moment of resistance of said median portion.

4,622,720

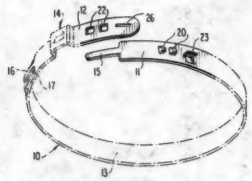
FASTENING ARRANGEMENT FOR OPEN HOSE CLAMP

Hans Oetiker, 21 Oberdorfstrasse, CH-8810 Horgen, Switzerland

Continuation-in-part of Ser. No. 446,503, Dec. 3, 1982. This application Jun. 20, 1984, Ser. No. 622,766

Int. Cl.[4] B65D *63/02*

U.S. Cl. 24—20 TT **14 Claims**



1. A clamp structure, comprising clamping band means having open ends, and means mechanically interconnecting the open ends of the band means including at least two outwardly extending hook means in an inner band portion operable to engage in aperture means in an outer band portion, at least one of the hook means being a cold-deformed support hook, characterized in that another one of the hook means is a combined guide and support hook, said combined guide and support hook having inclined guide and support surface means operable to initially engage with the corresponding aperture means in the outer band portion, the rear edge of said guide and support surface means sloping upwardly away from the free end of the inner band portion, as viewed in side view of the clamp structure so as to guide the inner and outer band portions with respect to one another while at the same time absorbing circumferentially directed tightening forces until the cold-deformed support hook becomes effective in absorbing tightening forces by engagement of its abutment surface means with the corresponding aperture means while the combined guide and support hook will continue to assist in the support function as it is able to absorb longitudinally directed forces without bending.

4,622,721

CONNECTING DEVICE FOR COMPONENTS AND FOR TENSIONING AND/OR CONTROL DEVICES WITH BELTS

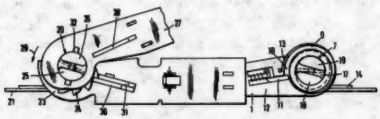
Reinhard Smetz, Baldingen, and Helmut Speich, Hüttlingen, both of Fed. Rep. of Germany, assignors to RUD-Kettenfabrik Rieger & Dietz GmbH u. Co., Fed. Rep. of Germany

Filed Dec. 3, 1984, Ser. No. 677,185

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1983, 3344488; Dec. 6, 1983, 3344489

Int. Cl.[4] B25B *25/00*; B66F *3/00*

U.S. Cl. 24—68 CD 12 Claims



1. A connecting device for components—such as hooks (5), eyes, shackles, chain links or the like—for tensioning devices of hoisting arrangements, for tensioning devices of lashing arrangements, for control devices of hoisting arrangement and for control devices of lashing arrangements with belts, which exhibits a belt connection (7) mounted rotatably between mutually opposite side walls, (1,2), which is provided with an introduction slot (17) for the belt (14) and is connected integrally in rotation to at least one ratchet wheel (9) which exhibits only one tooth (10), with which a resiliently mounted detent pawl (11) is associated.

4,622,722

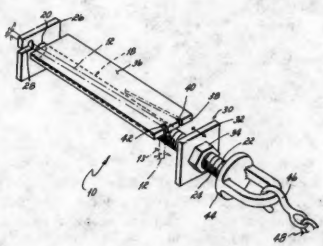
WIRE CLAMPING APPARATUS

Dennie R. Story, 2929 Limaburg Rd., Hebron, Ky. 41048

Filed Feb. 25, 1985, Ser. No. 705,004

Int. Cl.[4] F16G *11/00*

U.S. Cl. 24—115 R 9 Claims



1. Apparatus for clamping wire comprising:

an elongated rod having a forward end and a rearward end;

a wire locating means mounted to said forward end of said rod for holding wire therein;

a clamping means movably mounted to said rod;

a support plate non-rotationally fixed to said rod between said wire locating means and said clamping means, said support plate having a rearward end and wire receiving means disposed in the rearward end of the support plate;

said support plate defining a wire path from a forward end of said rod to the rearward end of said support plate; and

said clamping means being axially movable along said rod toward said rearward end of said support plate for capturing and holding wire against the rearward end of said support plate within said receiving means and against movement with respect to said apparatus.

4,622,723

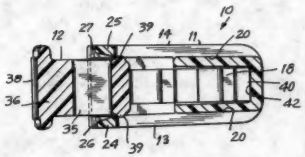
CORD LOCK

Mark J. Krauss, Forest Hills, N.Y., assignor to American Cord & Webbing Co., Inc., New York, N.Y.

Filed Mar. 18, 1985, Ser. No. 712,882

Int. Cl.[4] F16G *11/00*

U.S. Cl. 24—115 G 9 Claims



1. A cord lock comprising: a housing comprising opposing sides and a bottom so as to form a recess, and being formed with through holes on said opposing sides; and an insert being formed so as to be slidably received in said recess, said insert comprising a plunger portion and an integral spring portion disposed at the end thereof, said plunger portion being formed with a transversely disposed through hole, whereby when the plunger is despressed, the spring compresses so that the plunger hole aligns with the holes on the housing sides so as to receive a cord, and with release of the plunger the spring expands to lock the cord between the plunger portion and the housing, said plunger portion further comprising a pair of oppositely disposed ears, having rounded portions and extending outwardly from said plunger portion, said ears being rigid, and said housing being formed with a tapered portion to receive the ears in a snap fit between the rounded portions and the plunger portion and within the respective housing through holes, said recess being about rectilinear, and said spring being rectilinear to be received in said recess and with the rounded portions of the ears extending outwardly from the housing portion in which the spring is received.

4,622,724

SECURITY CLAMP FOR CABLES

Jacques Dupre, La Talaudiere, France, assignor to Societe DUPRE, Saint-Etienne, France

Filed Sep. 6, 1984, Ser. No. 647,643

Claims priority, application France, Sep. 20, 1983, 83 15373

Int. Cl.[4] A44B *13/00*; F16G *11/04*

U.S. Cl. 24—130 3 Claims

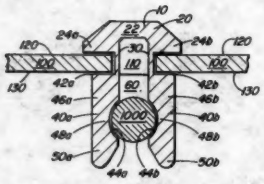
1. Safety hook for securing elastic cables, including a hook-shaped head (1*a*) and opposite thereto a portion (1*b*) formed and arranged for the engagement and the anchoring of an elastic cable (2), characterized in that said portion (1*b*) is provided within the thickness thereof with a contoured opening (1*c*) having vertically offset bridgelets (1*d*, 1*e*) on each side, and contoured longitudinal imprints (1*f*, 1*g*) to facilitate positioning and engagement of said cable, said bridgelets overlapping the opening and being open and closed for the introduction, withdrawal, and positioning of the cable in combination with said opening (1*c*).

4,622,725

FASTENER FOR MOUNTING A CIRCUIT BOARD OR THE LIKE TO A FRAME

Donald L. Bumgardner, South Lyon, Mich., assignor to Northern Telecom Limited, Montreal, Canada

Filed Sep. 20, 1985, Ser. No. 778,133
Int. Cl.[4] F16B *13/04*
U.S. Cl. 24—453 16 Claims



1. A fastener for mounting a circuit board or the like to a frame member, said fastener comprising:

a non-circular head member for inserting into an opening through the circuit board and rotating into engagement with a first surface of the circuit board;

a neck member connected to the head member for extending through the opening; and

at least two substantially parallel resilient limb members for resiliently springing apart to receive said frame member and for resiliently springing back to retain the frame member, each of said limb members comprising:

(a) a first end portion connected to the neck member and having a shoulder for engaging a second surface of the circuit board;

(b) a middle portion connected to the first end portion and having a recess for receiving and retaining the frame member; and

(c) a second end portion connected to the middle portion; and

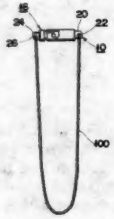
adjacent limb members having a gap therebetween which widens between the second end portions of said limb members and which communicates with said recess.

4,622,726

RELEASABLE FASTENING CONSTRUCTION

Tatsuo Nakamura, Tokyo, Japan, assignor to TDK Corporation, Tokyo, Japan

Filed Aug. 19, 1985, Ser. No. 766,950
Claims priority, application Japan, Aug. 21, 1984, 59-126651[U]
Int. Cl.[4] A44B *13/00;* A41F *5/08*
U.S. Cl. 24—590 16 Claims



1. A releasable fastening construction for releasably fastening together both ends of an article comprising:

a first connector opened at the inner end thereof and closed at the outer end thereof so as to define a blind hole therein, said first connector being connected at the outer end thereof to one end of said article;

a second connector comprising a bar-like connector body which is adapted to be inserted at the inner end side thereof into said blind hole of said first connector, said second connector being connected at the outer end thereof to the other end of said article;

at least one projection provided on one of said first and second connectors;

at least one guide means of a substantially L-shape provided at the other of said first and second connectors, said guide means being adapted to permit said projection to be fitted therein to guide said projection therethrough when said bar-like connector body of said second connector is insertedly fitted in said blind hole and having projection holding means provided at the terminal end portion thereof; and

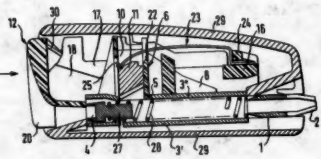
magnets respectively arranged at the closed end of said blind hole and at the inner end of said bar-like connector body in a manner to be opposite to each other when said bar-like connector body is fitted in said blind hole and so as to repel each other.

4,622,727

BUCKLE FOR A SAFETY BELT

Franz Wier, Goggingen, Fed. Rep. of Germany, assignor to TRW Repa GmbH, Alfdorf, Fed. Rep. of Germany

Filed Aug. 24, 1984, Ser. No. 644,049
Claims priority, application Fed. Rep. of Germany, Aug. 31, 1983, 3331453
Int. Cl.[4] A44B *11/26*
U.S. Cl. 24—642 6 Claims



1. In a buckle fastener for a safety belt comprising a housing having a guiding channel for guiding a tongue into and from said housing, a latching member movable transversely to said insertion channel for selective engagement and disengagement with a recess formed in the tongue, a leaf spring member biasing said latching member into engagement with the recess in the tongue, and a pressure key slidably guided in said housing in a direction parallel to said guiding channel, said pressure key being provided with ramp means engaging said latching member for pushing said latching member out of engagement with the recess in the tongue when said pressure key is depressed, the improvement wherein said leaf spring has one end secured to said pressure key and its opposed free end bearing on said latching member, said leaf spring moving simultaneously with said pressure key when it is depressed, an abutment member connected with said housing and having an edge extending transversely relative to said leaf spring and being positioned in such a manner in relation to said leaf spring that, upon partial depression of said pressure key, an intermediate portion of said leaf spring abuts against said edge and upon further depression of said pressure key said free end of said leaf spring is lifted off said latching member.

4,622,728
METHOD AND APPARATUS FOR SHRINKPROOFING TUBULAR FABRIC

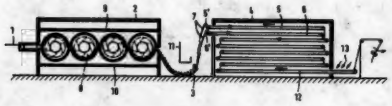
Lothar Bumüller, Rielasingen/Worblingen; Alfred Engelmann, Moos; Franz Kille; Alfred Maier, both of Radolfzell; Otto Scharf, and Fritz Wörner, both of Radolfzell, all of Fed. Rep. of Germany, assignors to Fleissner GmbH & Company, Egelsbach, Fed. Rep. of Germany

Filed Sep. 26, 1983, Ser. No. 535,702

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1982, 3235555

Int. Cl.[4] D06C *5/00*

U.S. Cl. 26—18.5 **43 Claims**



1. A method for shrinkproofing tubular fabric, especially knitted goods, wherein the fabric is subjected to a wet treatment, spread while wet, then dried in a tension-free manner, characterized in that the fabric is pre-dried to have a moisture content less than 30% by weight; the pre-dried fabric is overstretched more than 130%, based on the width of the finished fabric material on a spreader means having conveyor means provided with teeth for positively engaging the fabric to effect advancement of the fabric during overstretching of more than 130%, the fabric is overfed uniformly lengthwise onto the spreader means as the fabric is overstretched on said spreader means, and then the overstretched fabric is finish-dried continuously in a hot air drier under the action of heat in a relaxed state with shaking movements being imparted to the fabric.

17. An apparatus for shrinkproofing tubular fabric which comprises storage means for retaining at least a portion of one continuous length of tubular fabric having a predetermined moisture content, means for overfeeding the at least one tubular fabric lengthwise in a uniform manner, a spreader means for over-stretching the width of the at least one tubular fabric while the fabric is overfed and a shaker drier means located downstream from the spreader means for simultaneously shaking and drying the over-stretched fabric; said shaker drier means including at least one conveyor belt on which the tubular fabric is conveyed in a relaxed state; said spreader means including conveyor means having teeth for positively engaging the tubular fabric and for continuously advancing the overstretched fabric onto the at least one conveyor belt; and said means for overfeeding the at least one tubular fabric lengthwise including drive means equipped with teeth for engaging the tubular fabric and for overfeeding the tubular fabric onto said conveyor means.

4,622,729
APPARATUS FOR REMOVING BURRS FROM WELDED MATERIAL

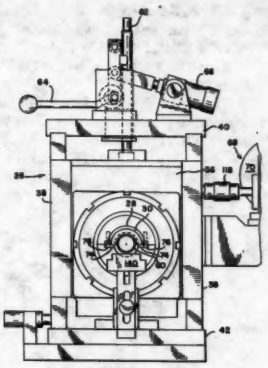
William J. Dempsey, Lombard; Walter R. Brunken, Medinah, and Alfred F. Mailhiot, Jr., Country Club Hills, all of Ill., assignors to Addison Machine Engineering Inc., Chicago, Ill.

Filed Apr. 11, 1984, Ser. No. 599,240

Int. Cl.[4] B23P *15/44, 23/04*

U.S. Cl. 29—33 A **23 Claims**

21. In a scarfing tool for removing a weld bead from a tubular member, a combination of a tool bit holder and a tool bit, said holder comprising a plate member having distal and frontal sides and provided with an opening for the passage of said tubular member through said holder, the distal side being adapted for securement to an end of a hollow spindle, said frontal side having an undercut portion extending across the width of said holder, the remaining portion of said holder defining an overhang, an arcuate seat formed in the central portion of the overhang and extending beyond each side of said opening, said tool bit having an arcuate shape complementarily fitted into said seat, and bracket members, one on each side of



said opening, secured to said overhang and abutting ends of said tool bit.

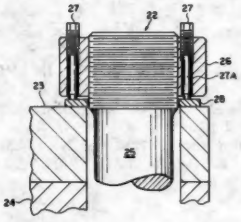
4,622,730
APPARATUS TO MECHANICALLY STRESS A BOLT-TYPE FASTENER

Rolf Steinbock, 603 Lindsay Rd., Carnegie, Pa. 15106

Continuation-in-part of Ser. No. 595,402, Mar. 30, 1984, abandoned. This application Feb. 27, 1985, Ser. No. 704,967

Int. Cl.[4] F16D *1/00;* **F16B** *35/00;* **B21B** *13/02*

U.S. Cl. 29—116 AD **18 Claims**



1. A fastener apparatus to compress a support member against a first member, said apparatus including an elongated shank part extending from said first member and passed freely through an enlarged opening in said support member, an anchor flange connected to one end portion of said elongated shank part for support by said first member, a stress generating flange connected to an opposite end portion of said elongated shank part for exerting a compressive force on said support member, said stress generating flange having a plurality of holes at spaced-apart locations about an outer peripheral part thereof to overlie said support member, and a plurality of jack bolts threadedly engaged with said holes to separately receive a torque, the jack bolts having end parts extending from said holes to stress said elongated shank part extending between said anchor flange and said stress generating flange through torquing said jack bolts for applying a compressive reaction force between said support member and said first member.

4,622,731
METHOD FOR THE PRODUCTION OF A HUB FOR A SPOKE-WHEEL

Sven-Inge Kjell, Anderstorp, Sweden, assignor to Enco Miljö Försäljning AB, Anderstorp, Sweden

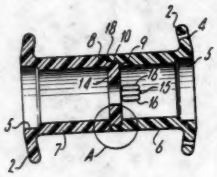
PCT No. PCT/SE83/00270, § 371 Date Feb. 27, 1984, § 102(e) Date Feb. 27, 1984, PCT Pub. No. WO84/00327, PCT Pub. Date Feb. 2, 1984

PCT Filed Jul. 4, 1983, Ser. No. 598,345

Claims priority, application Sweden, Jul. 12, 1982, 8204271; Nov. 29, 1982, 8206791

Int. Cl.[4] B21K *1/40*

U.S. Cl. 29—159.3 **20 Claims**



1. A process of manufacturing a hub for a spoke wheel, said hub being made of two separate parts, each of said two parts being made from a plastic material by injection molding, said method comprising the steps of:

providing a first separate part having a flange section at one end and a portion of a central section at the other end thereof;

providing a second separate part having a flange section at one end and a portion of a central section at the other end thereof;

providing an insert and placing said insert on one of said separate parts near said other end thereof;

pressing said separate parts axially to each other until both the first and the second separate parts abut against the insert; and

joining the first and second separate parts to each other at a joint to thereby form the hub having two flanges, one at each end, and a central part having a joint region adjacent the insert.

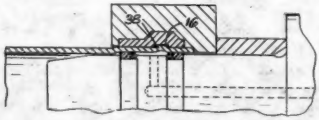
4,622,732
METHOD FOR FORMING JOINTS IN PRESSURIZED FLUID SYSTEMS

Frederick J. Broderick, Woodland Hills, Calif., assignor to Haskel, Inc., Burbank, Calif.

Filed Nov. 23, 1984, Ser. No. 674,516

Int. Cl.[4] B23P *17/00;* **B21D** *39/00;* **F16L** *17/00*

U.S. Cl. 29—421 R **10 Claims**



1. In a pressurized fluid system, a method for forming a joint between a metal tube and a fitting, said fitting being adapted to accept a tube of a predetermined outside diameter, said method comprising:

inserting an end of said tube in an annular ferrule having an internal annular groove, and positioning said tube such that an end portion thereof projects beyond said ferrule;

closing a die around said ferrule and said end portion a portion of said die having an inside diameter conforming to said predeterming outside diameter;

inserting a mandrel into said tube and supplying pressurized swaging fluid through said mandrel to an annular space between said mandrel and said tube, thus (1) expanding said tube radially to form an annular bulge on said tube that extends into said groove whereby said tube is interlocked with said ferrule, and (2) pre-sizing said end portion of said tube to said predetermined outside diameter by pressing it against a surface of said portion of said die;

opening and removing said die;

withdrawing said mandrel from said tube;

placing a deformable sealing ring over said end portion;

positioning said tube and said ferrule with respect to said fitting, so as to define an annular cavity bounded by said end portion, said ferrule and said fitting in which said sealing ring is disposed; and

securing said ferrule to said fitting.

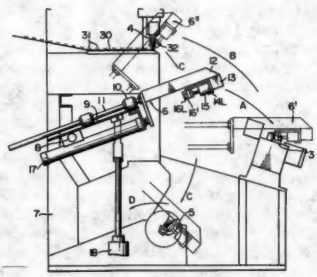
4,622,733
BRANCH WIRE CONNECTING APPARATUS

Michio Fukuda; Toshifumi Okunishi, and Eiji Fudo, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd. and Tokai Electric Wire Company Limited, both of Osaka, Japan

Filed Jan. 24, 1984, Ser. No. 573,404

Int. Cl.[4] H01R *43/04*

U.S. Cl. 29—564.4 **11 Claims**



1. An apparatus for connecting at least one branch electric wire to an intermediate portion of a main electric wire, comprising: a stripping section including an insulating stripping apparatus for removing a portion of the insulation from the main electric wire disposed at the front middle portion of the apparatus, said means for stripping comprising means for gripping the main branch wire on either side of the stripping section and stripping means for severing the insulation and removing it from a section of the wire core and means for receiving a stripped end of a branch electric wire, a solderless connecting section disposed at the rear upper portion of the apparatus for applying a solderless connector to the stripped main electric wire and one end of a stripped branch wire in said solderless connecting section, a taping section comprising means for taping the thus solderless connected main and branch wires in the taping section disposed at the rear lower portion of the apparatus, and a transportation hand means having wire gripping means and supported for pivotal and forward and rearward movement for transporting and delivering said wires from said stripping section to solderless connecting section and from said solderless connecting section to said taping section, and detecting means for detecting the presence of the stripped end of the one branch wire in proximity to the stripped portion of the main electric wire in the stripping section.

4,622,734
APPARATUS FOR THE VARIABLE MACHINING OF WORKPIECES

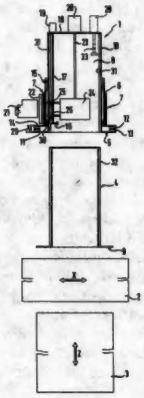
Rolf Kölblin, Fischen, and Manfred Huber, Munich, both of Fed. Rep. of Germany, assignors to Wanderer Maschinengesellschaft mbH, Haar, Fed. Rep. of Germany

Filed May 4, 1984, Ser. No. 607,179

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1983, 3328230

Int. Cl.⁴ B23Q *3/155*

U.S. Cl. 29—568 **36 Claims**



1. Apparatus for the machining of workpieces, the apparatus comprising a central module and a vertical module, wherein said central module comprises:

a substantially cylindrical and hollow basic body with a longitudinal axis defining an internal chamber extending along said longitudinal axis,

a hollow carrier sleeve disposed outwardly around said basic body and having at least one mount on a periphery of said carrier sleeve for attachment of various exchangeable tool support units,

said carrier sleeve being rotatable around said basic body, and wherein said vertical module comprises:

a hollow columnar unit being arranged in said internal chamber, said central module being moveable along said columnar unit.

4,622,735
METHOD FOR MANUFACTURING A SEMICONDUCTOR DEVICE UTILIZING SELF-ALIGNED SILICIDE REGIONS

Tadashi Shibata, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 328,533, Dec. 8, 1981, abandoned. This application Aug. 29, 1984, Ser. No. 645,536

Claims priority, application Japan, Dec. 12, 1980, 55-174653; Jan. 26, 1981, 56-9085; Jan. 26, 1981, 56-9087; Jul. 28, 1981, 56-117052

Int. Cl.⁴ H01L *21/28, 21/306*

U.S. Cl. 29—571 **12 Claims**

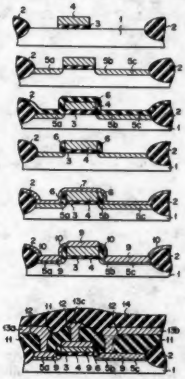
1. A method for manufacturing a semiconductor device, comprising the following steps in the following order:

(a) forming a gate insulating film on a surface of a silicon substrate, and a gate electrode on said gate insulating film;

(b) forming a source region and a drain region by doping said substrate with an impurity which has a conductivity type opposite to a conductivity type of said silicon substrate;

(c) forming an insulating layer covering the entire surface of said substrate and etching the insulating layer by an anisotropic etching, thus leaving the self-aligned insulating layer on the side walls of said gate electrode;

(d) depositing a metal on the entire surface, forming a metal silicide film on the silicon surface by reacting silicon with the metal which is in contact with the silicon, and eliminating unreacted metal, thus forming self-aligned metal silicide films on regions on which an insulating film is not formed, said region including said source region and said drain region; and



(e) forming electrodes which are connected to the source region, drain region and gate electrode.

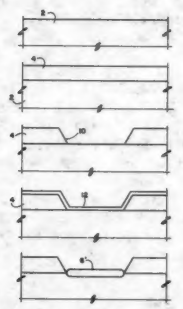
4,622,736
SCHOTTKY BARRIER DIODES

Vladimir F. Drobny, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Jan. 30, 1984, Ser. No. 575,235

Int. Cl.⁴ H01L *29/48, 29/56*

U.S. Cl. 29—571 **4 Claims**



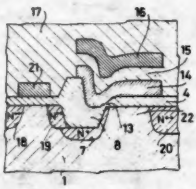
1. A method of manufacturing a Schottky barrier diode utilizing a substrate of semiconductor material, comprising forming a layer of dielectric material on a major surface of said substrate, said layer defining a restricted opening through which the substrate is exposed, forming within said opening at said major surface a body of a single phase compound of semiconductor material and a first metal, which compound is intrinsically stable at temperatures up to 600 deg. C. and which first metal has an intrinsic barrier height within the range from about 0.6 eV to about 0.8 eV, and depositing a layer of a refractory metal over the dielectric material and said body.

4,622,737

PROCESS FOR THE FABRICATION OF A NONVOLATILE MEMORY CELL WITH VERY SMALL THIN OXIDE AREA AND CELL

Andrea Ravaglia, Bologna, Italy, assignor to SGS-ATES Componeti Electtronici S.p.A., Catania, Italy

Filed Aug. 12, 1985, Ser. No. 764,985
Claims priority, application Italy, Sep. 25, 1984, 22812 A/84
Int. Cl.[4] H01L *29/78*
U.S. Cl. 29—571 3 Claims



1. Process for the fabrication of a nonvolatile memory cell with very small thin oxide area characterized in that it comprises:

(a) preparation of a monocrystalline silicon substrate of a first conductivity type covered with a layer of oxide and a layer of nitride;

(b) etching of said oxide layer and said nitride layer in a predetermined area and doping of the underlying silicon substrate with an opposite conductivity type modifier in said area;

(c) growth of thick field oxide on said doped area of the silicon substrate;

(d) etching of a side portion of predetermined dimensions of said thick field oxide with underetching under the nitride layer until an edge of the underlying doped area of the silicon substrate is exposed;

(e) etching of the nitride layer;

(f) growth of thin oxide over said uncovered edge of the silicon-substrate to form a floating gate oxide;

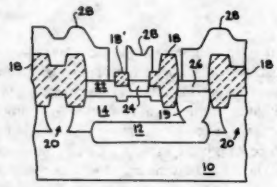
(g) final deposit of a first floating gate and a second control gate layer of polycrystalline silicon on said thin oxide with interposition between said first floating gate and said second control gate of an oxide layer.

4,622,738

METHOD OF MAKING INTEGRATED BIPOLAR SEMICONDUCTOR DEVICE BY FIRST FORMING JUNCTION ISOLATION REGIONS AND RECESSED OXIDE ISOLATION REGIONS WITHOUT BIRDS BEAK

Peter S. Gwozdz, Cupertino; Christopher O. Schmidt, Sunnyvale, and William L. Price, Saratoga, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Apr. 8, 1985, Ser. No. 720,824
Int. Cl.[4] H01L *21/265, 21/225*
U.S. Cl. 29—576 B 20 Claims



1. A method for fabricating a bipolar semiconductor device, said bipolar semiconductor device having a silicon substrate of a first conductivity type, a first active region of a second conductivity type formed in said silicon substrate of a first conductivity type, and an epitaxial layer of a second conductivity type formed over said silicon substrate and over said first active region, said bipolar semiconductor device also having a buffer layer formed over said epitaxial layer and a masking layer formed over said buffer layer, wherein said first active region functions as a buried collector region of said bipolar semiconductor device, said method comprising the steps of:

optically exposing portions of a layer of photoresist material formed over said masking layer, wherein said optically exposing is accomplished using stepper lithography to define within said photoresist layer images for a plurality of surface areas of said epitaxial layer, and such that portions of said masking layer not optically exposed define at least one first region and at least one second region of said epitaxial layer;

exposing said plurality of surface areas of said epitaxial layer by removing portions of said masking layer underlying said portions of said photoresist layer which were optically exposed, wherein said removing is accomplished by selectively plasma etching said masking and buffer layers;

forming a plurality of isolation regions of a first type in said selected portions of said epitaxial layer, such that each said exposed area of said buffer layer is incorporated into one of said first type isolation regions, and wherein said masking layer prevents said isolation regions from being formed on any portions of said epitaxial layer other than on said selected portions of said epitaxial layer, said first type isolation regions being formed of insulating material different from material comprising said masking layer, and being formed of the same material comprising said buffer layer;

removing portions of said masking layer and said buffer layer overlying all of said first epitaxial regions;

forming second type isolation regions in all of said first epitaxial regions said second type isolation regions being of said first conductivity type and extending from the upper surface of said epitaxial layer to a depth greater than the depth of said epitaxial layer, wherein at least one of said second type isolation regions defines the periphery of an island of said epitaxial layer, which island includes said at least one second epitaxial region;

forming a second active region in said at least one second epitaxial region within said island of said epitaxial layer, wherein said second active region functions as a base region of said bipolar semiconductor device;

simultaneously forming a third active region and a fourth active region in said at least one second epitaxial region within said island of said epitaxial layer, wherein said third active region functions as an emitter region of said bipolar semiconductor device, and said fourth active region functions as a collector contact region of said bipolar semiconductor device;

removing remaining portions of said buffer layer;

depositing a layer of conductive material over said semiconductor device;

forming a layer of photoresist material over said layer of conductive material;

optically exposing portions of said photoresist layer using stepper lithography to define within said photoresist layer images of portions of said semiconductor device other than selected portions of said second, third and fourth active regions;

exposing said portions of said semiconductor device other than said selected portions of said second, third and fourth active regions by removing said optically exposed portions of said photoresist layer, wherein said removing is accomplished by developing said photoresist layer; and

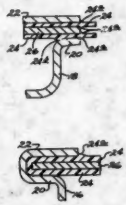
anisotropically plasma etching said conductive material so as to form conductive lines on said second, third and fourth active regions.

4,622,739

METHOD OF PROVIDING AN IMPROVED SEAL FOR THERMOSTATIC SWITCH HOUSINGS

Radi Pejouhy, Marshfield, Mass.; Stephen J. Benner, Woonsocket, R.I., and Joshua Loring, Wrentham, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 565,949, Dec. 27, 1983, abandoned.
This application Sep. 12, 1985, Ser. No. 775,192
Int. Cl.[4] H01H *11/00*
U.S. Cl. 29—622 12 Claims



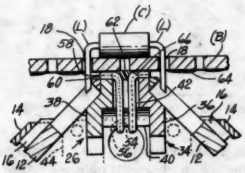
1. A method for sealing a thermally responsive switch to prevent liquid material from seeping into the switch particularly during installation in the windings of electrical apparatus in which the windings are coated with electrically insulative material in liquid form which cures into solid material comprising the steps of forming a metallic housing having a recess therein open at one side with a ledge formed around the opening and adapted to receive a lid to close the opening, lip portions extending outwardly from one of the ledge and the lid, mounting at least a portion of the switch in the recess, selecting an electrically insulative gasket comprising at least a layer of resin, placing the gasket on the ledge, forming a switch assembly by placing the lid on the top of the gasket on the ledge to close the opening, bending the lip portions and gasket contiguous thereto the clamp the lid to the housing, softening the layer of resin, maintaining required electrical clearance between the housing and the lid as well as forming a fillet between the gasket and the housing and lid to ensure that any voids between the gasket and the housing and lid have been filled in by deforming the layer by exerting a selected force on the gasket through the lip.

4,622,740

ELECTRICAL COMPONENT LEAD SENSOR

William H. Mirley, Jr., Reading, and Richard B. Maxner, Danvers, both of Mass., assignors to USM Corporation, Farmington, Conn.

Filed Nov. 21, 1983, Ser. No. 553,774
The portion of the term of this patent subsequent to Feb. 19, 2002, has been disclaimed.
Int. Cl.[4] H05K *13/04*
U.S. Cl. 29—715 3 Claims



1. In an automatic component inserting machine, a sensor for indicating that leads of a component are located down through their proper opening in the printed circuit board, comprising:

a. a cut-clinch mechanism carried by the machine adapted to be located below the printed circuit board to cut and clinch the component leads to attach the component to the board;

b. a fiber optics sensor associated with the cut-clinch mechanism and adapted to sense whether the component leads are in position prior to the operation of the cut-clinch mechanism;

c. said sensor having filaments adapted to emit light against the component leads and filaments adapted to receive the light reflected from said component leads;

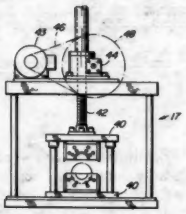
d. said sensor filaments being positioned with respect to said board and said cut-clinch mechanism so that only the component leads will reflect the emitted light.

4,622,741

METHOD OF DEFORMING A CABLE

Luc T. Dubreuil, St. Placide; Gaston D. Pouliot, St. Julie; Gerard G. Cote, La Prairie; Réjean Larouche, Dorval, and Bretislav P. Zuber, Montreal, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed May 9, 1985, Ser. No. 731,824
Int. Cl.[4] H01R *43/00*; B21D *37/10*
U.S. Cl. 29—858 3 Claims



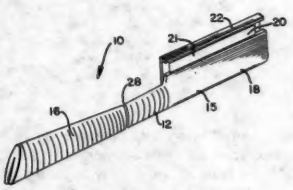
1. A method of preparing an electrical cable having a thermoplastic jacket material, said method being for the purpose of accepting a cable pulling eye and comprising reducing the outside diameter of an end portion of the cable by radially compressing the end portion simultaneously along the whole of its length while heating the jacket material along the whole end portion to soften and redistribute the material within the confines of the reduced outside diameter whereby the pulling eye with a sleeve which is too small in diameter to fit around the unreduced diameter cable, may have its sleeve disposed around the reduced diameter end portion.

4,622,742

DISPOSABLE SAFETY STRAIGHT RAZOR

Sang D. Lee, 867 Cottonwood Dr., Severana Park, Md. 21146

Filed Jun. 21, 1985, Ser. No. 747,247
Int. Cl.[4] B26B *21/06*
U.S. Cl. 30—55 20 Claims



1. A straight razor comprising:

an elongate body having a handle end for grasping by a user during use, and a blade end, said blade end including a blade having a sharp edge protruding therefrom for shav-

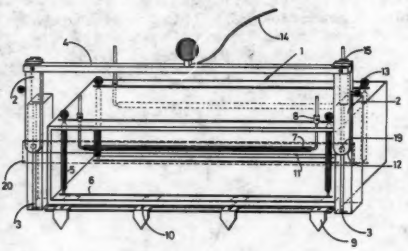
ing purposes, said handle end including an elongate groove adapted to fit over the blade after the razor has been used, said handle end and said blade end of the body being joined at an area of structural weakness so that said handle end and said blade end are separable whereby the separated handle end serves as a protective cover for the blade by placement of the blade into the groove of the handle end.

4,622,743

DEVICE FOR CUTTING SHEETS OF SOFT MATERIAL

Richard Voegele, Bernaustrasse 367, CH-4353 Leibstadt, Switzerland

Filed Jun. 14, 1985, Ser. No. 745,419
Int. Cl.[4] B26D *7/10*
U.S. Cl. 30—140 6 Claims



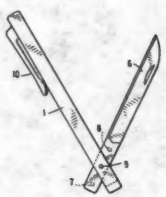
4. An apparatus for cutting sheets of soft material, characterized by a casing, slidably guiding and supporting the sheet to be cut, one end of said casing being provided with a guillotine-like guided cutting device, at least one stop means being arranged on the outside of said casing in alignment with said cutting device, dovetailed guiding posts of electrically insulating material being attached on opposite sides of said casing, two slides being slidably arranged in said guiding posts, said slides supporting said cutting device and being connected to one another by means of a connecting beam.

4,622,744

FOLDING KNIFE WITH LOCKING DEVICE

Lauro A. Nogueira, Fazenda Chapeu, Municipio De Campos Altos, Minas Gerais, Brazil

Filed Nov. 19, 1984, Ser. No. 672,874
Claims priority, application Brazil, May 25, 1983, 6300691
Int. Cl.[4] B26B *1/04*
U.S. Cl. 30—155 6 Claims



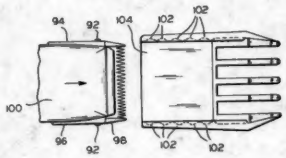
1. A folding knife having a U-shaped body comprised by two straight flat legs each lying in one of two parallel planes, a straight flat blade lying in a plane between and parallel to said two parallel planes, said blade being mounted for pivotal movement between the legs about an axis adjacent the ends of the legs, one of the legs having a hole therethrough, and two projections on the same side of the blade as the hole, the two projections being spaced equal distances on opposite sides of said axis and being spaced from said axis the same distance as said hole, the projections being adapted to snap into and out of said hole thereby to hold the blade releasably in open or closed position.

4,622,745

HAIR TRIMMING APPARATUS

Gregory S. Wahl, Sterling, Ill., assignor to Wahl Clipper Corporation, Sterling, Ill.

Filed Sep. 28, 1984, Ser. No. 655,907
Int. Cl.[4] B26B *19/20*
U.S. Cl. 30—201 7 Claims



1. Apparatus for trimming hair to a predetermined distance from the skin comprising:

a hair clipper having cutting means and handle means secured to said cutting means for controlling said cutting means; and

one-piece comb means adjustably secured to said hair clipper for determining said predetermined distance, said comb means including a plurality of fins extending away from said cutting means, said fins each having an outer edge which may be placed in proximal contact with said skin to determine the distance between said cutting means and said skin,

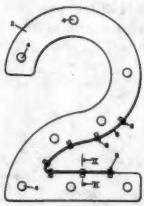
a portion of said outer edges behind said cutting means being recessed towards said cutting means, said recessed portion having an outer edge surface which is about 1.125 inches long, and extends inwardly about 0.062 inches from a straight line, whereby said apparatus may trim hair in confined spaces such as the upper lip by cutting said hair in the direction of growth.

4,622,746

GUIDE FOR DECORATIVE GRASS CUTTING

Jay M. Appelson, 2211 W. 71st St., Prairie Village, Kans. 66208

Filed Jun. 24, 1985, Ser. No. 747,781
Int. Cl.[4] E04H *17/00*
U.S. Cl. 30—286 7 Claims



1. A grass cutting guide facilitating the formation of decorative patterns in lawn grass delineated by grass cut to relatively different elevations, said guide comprising:

a. a planar template formed of flexible sheet material, having the form of a desired pattern and adapted to be laid on the grass in a desired location,

b. an elongated guide strip of sheet form adapted to be arranged along the ground surface at the edge of said

template with its transverse axis extending vertically upwardly from the ground,

c. a series of support members attached to said guide strip at intervals along its length,

d. means operable to secure each of said support members releasably to and edge of said template, and

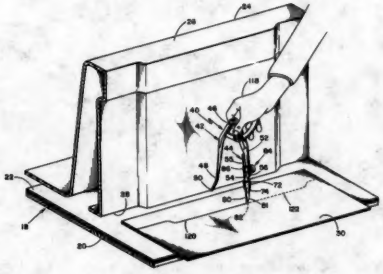
e. anchoring means operable to secure said support members against horizontal movement over the ground, whereby grass may be cut to one side of the guide strip, while cutting of grass at the other side of said guide strip is prevented by said strip.

4,622,747

CUTTING DEVICE AND METHOD FOR PROFILING SHEET MATERIAL

Kendall J. Vassar, 620 51st Ave. N.E., Columbia Heights, Minn. 55421

Filed Sep. 6, 1985, Ser. No. 773,051
Int. Cl.[4] B26B *5/00*
U.S. Cl. 30—293 **14 Claims**



1. A method of profiling sheet material for installation in a room having a nonlinear edge formed by the juncture of horizontal and vertical surfaces, the method comprising the steps of advancing one leg of a device along a nonlinear path corresponding to the nonlinear edge with which said sheet material is to be fitted, said device having a second leg provided with a blade member formed with a knife edge so that said blade member cuts along a second nonlinear path determined by the direction in which said first leg is advanced along said nonlinear path to provide a severed strip of said material possessing a nonlinear cut edge corresponding to said nonlinear path and also providing a nonlinear edge on the remaining material corresponding to said nonlinear path, removing said severed strip, and then abutting the nonlinear cut edge of said remaining sheet material against said nonlinear edge that is to be fitted.

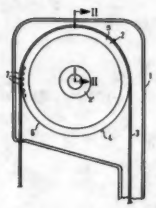
4,622,748

GUIDE ROLLER FOR BAND SAWS

Werner Binder, Stuttgart; Gerhard Gresser, Oberboihingen, and Alfred Dettelbach, Stuttgart, all of Fed. Rep. of Germany, assignors to REICH Spezialmaschinen GmbH, Nuertingen, Fed. Rep. of Germany

Filed Jul. 11, 1983, Ser. No. 512,552
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1982, 3227399
Int. Cl.[4] B23D *55/00, 47/00;* **F16H** *55/36*
U.S. Cl. 30—380 **1 Claim**

1. A guide roller for band saws for cutting foodstuffs, comprising a hub, a circumferential rim having a radially outer cylindrical surface for contacting and guiding a band saw blade, means operatively securing said rim to said hub, said rim further comprising two lateral side surfaces one on each side, and a plurality of slanted grooves forming passages (7) extending from said radially outer cylindrical surface to both of said side surfaces for continuously removing contaminations from said radially outer cylindrical surface to said side surfaces thereby avoiding the accumulation of contaminations on said radially outer cylindrical surface, said slanted grooves having openings in said cylindrical surface which are circumferentially spaced from each other to provide lands (7) between adjacent groove openings, said lands together maintaining said



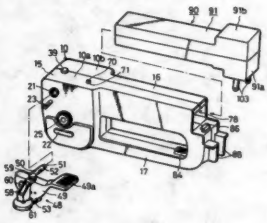
radially outer surface sufficiently cylindrical for said guiding of said band saw blade, and wherein said slanted grooves reaching into one of said side surfaces are staggered relative to the slanted grooves reaching into the other side surface, whereby lands along one edge of said cylindrical surface face grooves along the opposite edge of said cylindrical surface and vice versa.

4,622,749

ELECTRIC CAN OPENER

Kunitoshi Inagaki, Aichi, Japan, assignor to Kabushikikaisha Aichidenkikosakusho, Japan

Filed Mar. 21, 1985, Ser. No. 714,338
Claims priority, application Japan, May 7, 1984, 59-90326
Int. Cl.[4] B67B *7/46*
U.S. Cl. 30—421 **3 Claims**



1. In an electric can opener comprising a body, a can driving wheel mounted rotatably on the front surface of said body so as to be applied to the lower side of the seam of a can to be cut open, a cutter positioned rotatably against said front surface of said body so that the cutter cuts into the lid of said can, an electric motor accommodated inside said body and connected to said can driving wheel rotatably actuating the same, a hollow cylindrical grip portion projecting forwardly from said body, and a power source unit positioned in a space defined in said grip portion and connected to said electric motor for supplying electric power to the same, said grip portion being formed sufficiently thick to contain therein said power source unit, the improvement in which said power source unit comprises a housing, a chargeable battery contained in said housing, a pair of contact blades projecting from said housing for electrical connection with a domestic wall electric power outlet, a charging circuit including a transformer, a rectifier and a charging resistor, a pair of connection terminals provided inside said housing for electrical connection with said electrical motor, and a recessed portion formed on the outer surface of said housing, and said body is provided with a hold

means for engagement with said recessed portion, said power source unit being adapted to be inserted into or extracted from said hollow cylindrical grip portion by operating said hold means.

4,622,750

UNIVERSAL MEASURING GAUGE FOR GEOLOGICAL STRUCTURES

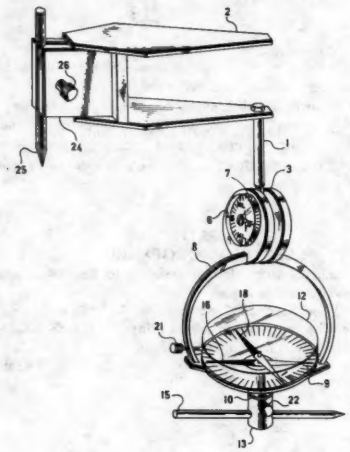
Josef Dudek, and Stanislav Adamek, both of Prague, Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

Filed Nov. 4, 1985, Ser. No. 794,746

Claims priority, application Czechoslovakia, Nov. 2, 1984, 8317-84

Int. Cl.[4] E21B *47/022*

U.S. Cl. 33—1 H **18 Claims**



1. A universal measuring gauge for geological structures, comprising

an application part;

a suspension part; and

an orientation part;

said application part includes

an arm,

a gib attached normal to said arm on one side thereof,

said arm is shaped on another side thereof into a journal of a universal bearing,

said journal passes through a bush of said universal bearing,

two axes radiate in opposite directions from the center of said bush, and

inclination indicators attached normal to the end of each said axes;

said suspension part includes

two vertical discs with protractor scales, each pivoted on a said axis,

a suspension firmly connected to each said vertical discs,

a transparent horizontal protractor scale disposed at a lower part of said suspension,

an upper half-bush of a second bearing disposed in the center of said lower part of said suspension,

a hollow pin passes through said second bearing,

said hollow pin is axially and radially slide-guided in said upper half-bush of said second bearing, and

a transparent horizontal disc is carried on said hollow pin; and

said orientation part includes

a lower half-bush of said second bearing,

said hollow pin is also axially and radially slide-guided in said lower half-bush of said second bearing,

a needle is mounted at its lower part in said lower half-bush of said second bearing,

said needle passes through said hollow pin,

a directional rod is mounted in said lower half-bush of said second bearing,

a thrust bearing is attached adjacent the top of said needle,

a direction indicator is attached to said needle in the plane of said thrust bearing, and

a magnetic needle is pivoted above said direction indicator on said top of said needle.

4,622,751

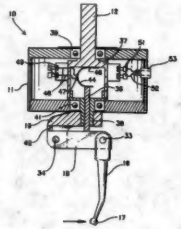
PRECISION ELECTROMECHANICAL MEASURING DEVICE

John W. Berg, 1085 Tasman Dr. #586, Sunnyvale, Calif. 94089

Filed Jul. 16, 1985, Ser. No. 755,457

Int. Cl.[4] G01B *7/31*

U.S. Cl. 33—169 C **13 Claims**



1. A position indicator and measuring device, comprising:

a housing;

a contacting finger pivotally connected to the housing, with a position-sensing end for contacting a surface of a workpiece;

a pressure transducer connected to the housing and having a pair of ends between which is contained a material whose resistance varies in accordance with pressure exerted on the material by the ends, both ends being connected to electrical leads and one end being fixed in position with respect to the housing;

spring means operably connected between the finger and the other end of the pressure transducer opposite said one end, for transmitting pivotal movements of the finger into changes of pressure against said other end of the pressure transducer and into changes of resistance in the pressure transducer for communication through the electrical leads; and

electrical display means for providing an indication to an operator of such changes in resistance and movements of the finger.

4,622,752

GAUGE FOR MACHINE TOOLS

John Harra, 155 W. 81st St., Apt. 6L, New York, N.Y. 10024

Filed Aug. 2, 1985, Ser. No. 761,968

Int. Cl.[4] G01B *7/30*

U.S. Cl. 33—185 R **13 Claims**

1. A gauge for determining whether a conductive element is oriented at a predetermined angle with respect to a reference surface on a machine tool, comprising:

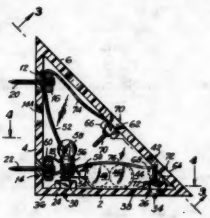
a first contact;

an electrical energy source connected in series with said first contact;

an indicator connected in series with said electrical energy source and said first contact;

a second contact connected in series with said first contact, said electrical energy source, and said indicator; and

a means orienting said second contact with respect to said first contact such that said conductive element closes an electrical circuit between the electrical energy source and said indicator when said gauge is placed on the reference



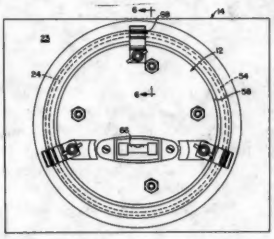
surface and abutted against said conductive element and when said conductive element is oriented at a first predetermined angle with respect to said reference surface.

4,622,753

ELECTRIC METER SOCKET REPAIR KIT AND TEMPLATE FOR USE THEREWITH

David W. Jones, Novi; Albert K. Langdon, Rochester; Allen V. Pruehs, Pontiac, and Darrell A. Robinson, Milford, all of Mich., assignors to Ekstrom Industries, Farmington Hills, Mich.

Filed Jul. 17, 1985, Ser. No. 755,846
Int. Cl.[4] B23Q *49/02*
U.S. Cl. 33—189 **9 Claims**



1. A repair kit for a socket for an electric meter of the type having rearwardly extending blade contacts and which is mounted into an aperture of a front cover of a meter box, said kit comprising a jaw contact assembly including a support plate, a set of jaw type contacts mounted onto the support plate in suitable spaced relation to receive the blade contacts of a meter, means on the support plate for mounting said assembly in adjustable spaced relation to a rear wall of the meter box, and means mountable into the meter aperture for enabling the positioning and orientation of mounting means on the rear wall of the meter box so that when the support plate is assembled with said mounting means, the jaw contacts thereon will be aligned with the blade contacts of an assembled meter when the meter is properly oriented in the meter opening.

4,622,754

AUTOMOTIVE DRIVE GUIDE SYSTEM WITH ERROR MONITOR FOR A MAGNETIC COMPASS THEREIN

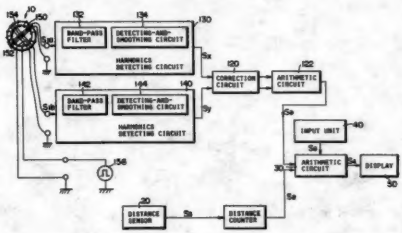
Satoru Chujo, Sagamihara, and Kenichi Mitamura, Kawasaki, both of Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Feb. 10, 1983, Ser. No. 465,492
Claims priority, application Japan, Feb. 15, 1982, 57-21305
Int. Cl.[4] G01C *17/30*
U.S. Cl. 33—356 **18 Claims**

1. A direction sensor with an error monitor comprising:

first means for detecting the orientation of the terrestrial magnetism and producing a periodic first signal indicative of the direction of terrestrial magnetism, said first signal having a signal phase which varies with a change in said orientation relative to said sensor and said first signal having a signal level proportional to the magnitude of the terrestrial magnetic field;

second means for producing a second signal having a level representative of a predetermined reference value, which predetermined reference value is determined based on an initial signal level of said first signal under conditions in



which an initial background noise exists at a predetermined signal phase of said first signal; and

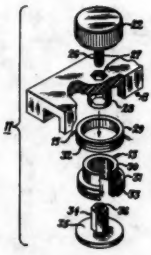
third means for detecting a subsequent signal level of said first signal at said predetermined signal phase thereof, said third means comparing said detected subsequent first signal level to said second signal level to determine the difference between the signal levels, and said third means producing a third signal when said first signal level is above said second signal level.

4,622,755

PARALLEL STRAIGHTEDGE

Russell J. Wood, P.O. Box A8 Bailey Rd., Lansboro, Mass. 01237

Filed Mar. 14, 1986, Ser. No. 839,512
Int. Cl.[4] B43L *13/02*
U.S. Cl. 33—444 **14 Claims**



1. A parallel straightedge comprising:

a pair of first and second carriage members attached to opposite ends of a double-edged metal formation for supporting said metal formation upon a drawing board;

a continuous cable arranged about a pair of cable guides at one end of the drafting board and secured to said drawing board at an opposite end; and

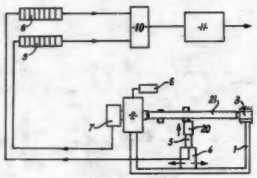
a pair of first and second cable brakes carried by said first and second carriage members, said cable brakes comprising first and second knobs having a threaded shaft and a base having a threaded pedestal, said threaded shaft extending through at least one apertured pulley to within said threaded pedestal whereby said continuous cable is arranged about said apertured pulley and said pulley becomes blocked when said threaded shaft engages said threaded pedestal a predetermined distance.

4,622,756

PROFILE CHECKING APPARATUS

Reginald G. Marsden, Crewe, England, assignor to Rolls Royce Motors Limited, Crewe, England

Filed Sep. 26, 1984, Ser. No. 654,541
Claims priority, application United Kingdom, Oct. 1, 1983, 8326343
Int. Cl.[4] F01B *21/20*
U.S. Cl. 33—556 14 Claims



1. A method of checking the profile of an element including the steps of:

advancing a detection head up to the element,

determining a reference point on the profile of said element from which movement from said point may be determined;

producing continuous relative movement between the detection head and the element;

continuously taking profile readings from the reference point along the profile of said element;

feeding said readings at selected spaced time intervals to a computing means;

storing ideal element profile data in said computing means; and

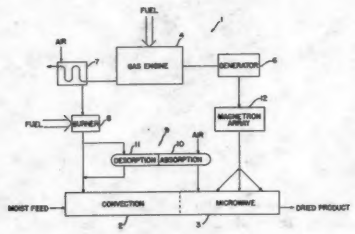
determining the error in element shape from said profile readings and said stored ideal element shape.

4,622,757

COGENERATION MICROWAVE FOOD DRYER

Samuel Bernstein, Bellevue, and Kenji Ushimaru, Seattle, both of Wash., assignors to Energy International, Inc., Bellevue, Wash.

Filed Dec. 24, 1984, Ser. No. 685,462
Int. Cl.[4] F26B *3/347*
U.S. Cl. 34—1 18 Claims



1. A method for efficient removal of moisture from a moist interior solid product with controlled physical change comprising the steps of:

convection heating said solid product with a heated air stream to remove internal moisture to achieve a maximum moisture removal rate while maintaining said product below a predetermined maximum temperature thereby controlling additional physical change to the product,

maintaining said convection heating until a predetermined critical moisture content of the product is achieved beyond which critical moisture content the drying rate decreases and the temperature of the product increases above said predetermined determined maximum with continued convection heating due to decreased evaporation and decreased surface migration of moisture, and

then exposing said product to microwave radiation to increase moisture migration toward the product surface for removal and evaporation cooling to maintain said product below said maximum temperature until the desired moisture removal is completed,

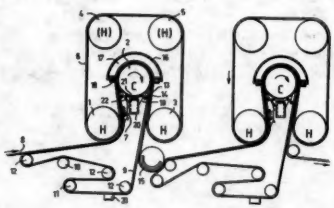
whereby the desired moisture will be efficiently removed from said product while controlling internal and surface physical change to the product.

4,622,758

METHOD OF AND A DEVICE FOR DRYING A PAPER WEB OR THE LIKE

Jukka Lehtinen, and Olli-Pekka Sorma, both of Tampere, Finland, assignors to Oy Tampella Ab, Tampere, Finland

Filed Sep. 11, 1985, Ser. No. 774,909
Claims priority, application Finland, Oct. 9, 1984, 843958
Int. Cl.[4] F26B *3/24*
U.S. Cl. 34—13 10 Claims



1. Method of drying a paper web or the like, in which method a web (8) and a wire or felt (9) supporting said web are subjected to a deairing treatment and the web (8) and the wire or felt (9) thus deaired are thereafter passed between two displaceable airtight surfaces of high heat conducting properties, said web (8) being enclosed between said surfaces in the drying zone over the entire width thereof, and the surface making contact with the wire or felt (9) is cooled by liquid in order to condensate the water evaporated from the web (8) by means of a heated surface making contact with the surface of said web, whereby said water is condensated into the wire or felt (9), which wire or felt (9) is separated from the web (8) after said surfaces and the water condensated is removed therefrom, characterized in that the surface making contact with the wire or felt (9) is the outer surface of a rotating metal cylinder (2) provided with internal cooling, and that the surface making contact with the web (8) is a metal band (6) displaceable around the outer surface of the cooled cylinder (2) stationarily with respect to said outer cylinder surface and preheated outside of the drying zone, which band is pressed from the outside thereof against the outer surface of the web positioned on the outer surface of the cooled cylinder (2), simultaneously pressing the web and the permeable wire or felt making contact with the cylinder surface against the outer surface of the cylinder.

4,622,759

CONTROL SYSTEM FOR CLOTHES DRYER

Syuzi Abe, Amagasaki, and Shin'ichi Ito, Kobe, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Aug. 12, 1985, Ser. No. 764,783
Claims priority, application Japan, Aug. 18, 1984, 59-171964
Int. Cl.[4] F26B *21/10*
U.S. Cl. 34—44 7 Claims

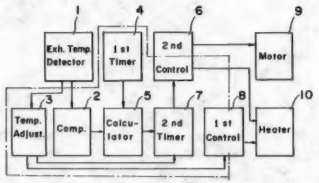
1. A control system for a clothes dryer which comprises:

an exhaust temperature detectng means for detecting the temperature of hot air vented from the dryer;

a comparing means for outputting a signal when either the exhaust temperature represented by an output from the detecting means or the rate of change in exhaust temperature attains a value higher than a predetermined value;

a first timer means for counting the time elapsed from the start of operation up until the generation of the signal from the comparing means;

a calculating means for determining the length of time from a time when an electric power is initially supplied to a heater until such time that clothes are dried to a predetermined dryness, in correspondence to the time counted by the first timer means;



a temperature adjusting means capable of generating, when the exhaust temperature is higher than the predetermined value, an output signal necessary to cause a first control means to interrupt the supply of the electric power to the heater;

a second timer means for generating an output upon the termination of the length of time determined by the calculating means, said second timer means ceasing a counting operation during a period in which the temperature adjusting means generates said output signal which interrupts the supply of electric power to the heater; and

a second control means operable in response to the output from the second timer means for deenergizing both the the heater and a motor used to drive a drum for accommodating the clothes to be dried.

4,622,760

APPARATUS FOR DESOLVENTIZING AND DRYING SOLVENT-CONTAINING RESIDUE MEAL

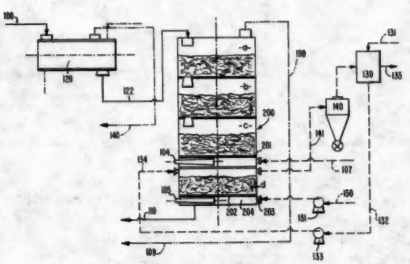
Heinz O. Schumacher, Höperfeld 26, D-2050 Hamburg 80, Fed. Rep. of Germany

Division of Ser. No. 590,741, Mar. 19, 1984, abandoned. This application Aug. 27, 1985, Ser. No. 769,766

Claims priority, application European Pat. Off., Mar. 31, 1983, 83103235.4

Int. Cl.[4] F26B *19/00, 17/12*

U.S. Cl. 34—65 **3 Claims**



1. Apparatus for desolventizing residue meal obtained in the extraction of oil and fat from vegetable materials with organic solvents in an extractor after the separation of the oil and fat, said apparatus comprising:

a pre-desolventizer means connected to the extractor for removing a substantial amount of said organic solvents from the residue meal;

a desolventizer having multiple stages for desolventization of residual organic solvents from the residue meal and a final stage having a perforated bottom adapted to provide a dried meal bed for the combined drying and cooling of the residue meal, said desolventizer being connected to said pre-desolventizer means, said pre-desolventizer means providing at least a part of the path along which the residue meal is conveyed from the extractor to said desolventizer;

means for providing indirect steam heating in said pre-desolventizer means; and

means for supplying cooling air through the perforated bottom into the final stage of said desolventizer to cool the meal dried in said final stage.

4,622,761

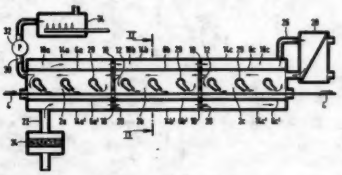
DRYING APPARATUS FOR SHEETS OF MATERIAL

Peter Barth, Neuwied, Fed. Rep. of Germany, assignor to Lohmann GmbH & Co KG, Neuwied, Fed. Rep. of Germany

Filed Sep. 6, 1985, Ser. No. 773,426

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1984, 3433224

Int. Cl.[4] F26B *13/02*

U.S. Cl. 34—86 **12 Claims**

1. A drying apparatus for sheets of material, said apparatus including drying chamber means through which a sheet of material which is to be dried is conveyed, and in which said sheet of material is contacted by flowing drying gas; said apparatus further including a feed line for supplying drying gas to said apparatus, a heater for heating said drying gas, and a withdrawal line for withdrawing said drying gas from said apparatus; the improvement comprising:

a drying chamber means comprised of cup-shaped and rounded-off wall elements which are easily detachably connected to one another, and which have a smooth inner surface and an outer surface; said withdrawal line communicates with said drying chamber means for receiving used drying gas therefrom;

a jacket which is disposed around, and is spaced from, said drying chamber means; said jacket has an inner surface which, together with said outer surface of said wall elements of said drying chamber means, define between them an intermediate space, with said feed line communicating with said intermediate space to supply said drying gas thereto;

conduit means connecting said intermediate space to said heater to supply said drying gas to the latter; and

further conduit means connecting said heater to said drying chamber means to supply heated drying gas to said drying chamber means, in which at least a portion of the heat of said drying gas is given off, via said wall elements, to said drying gas in said intermediate space; a pressure gradient is maintained between said intermediate space, said drying chamber means, and the atmosphere, with the pressure being lowest in said drying chamber means, said jacket also comprising cup-shaped wall elements which are eas-

ily detachably connected to one another, said drying chamber means being divided into sections, with said wall elements of said drying chamber means having respective lengths which correspond to the length of individual ones of said sections of said drying chamber means, said jacket also being divided into sections, with said wall elements of said jacket also having respective lengths which correspond to the length of individual ones of said jacket sections.

4,622,762

THROUGHFLOW TREATMENT CONTROL

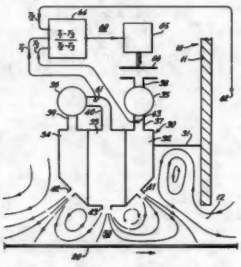
Colin M. Reed, Manchester, England, assignor to National Research Development Corp., London, England

Filed Mar. 4, 1985, Ser. No. 707,868

Claims priority, application United Kingdom, Mar. 5, 1984, 8405716

Int. Cl.[4] F26B *13/02*

U.S. Cl. 34—155 **11 Claims**



1. In a throughflow treatment process which comprises passing material in an effectively continuous manner through a gaseous treatment chamber by way of at least one open port, the control improvement of applying gas curtains across the path of the material to form externally adjacent said port a buffer zone between the chamber interior and the surrounding atmosphere, which zone acts generally to balance the gaseous outflow otherwise occurring through said port during operation, said buffer zone being formed by and between two curtains serially spaced respectively nearer to and further from said port, with said nearer curtain being formed with gas drawn from without said zone, and with said further curtain being formed with gas drawn from within said zone.

4,622,763

VAMP ASSEMBLY FOR AN ARTICLE OF FOOTWEAR

Thomas M. Adams, San Antonio, Tex., assignor to Kaepa, Inc., San Antonio, Tex.

Filed Mar. 22, 1984, Ser. No. 592,262

Int. Cl.[4] A43B *11/00*

U.S. Cl. 36—50 **9 Claims**

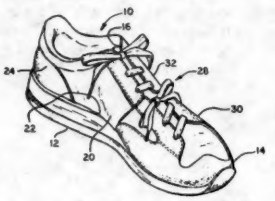
1. In a vamp assembly for an article of footwear:

(a) a vamp including upper and lower sections, the lower section including inside and outside vamp portions and the upper section including inside and outside vamp portions disposed on opposite sides of the longitudinal axis of the foot,

(b) connection means on the upper inside vamp portion and an equal number of connection means on the upper outside vamp portion, the connection means on the outside vamp portion being disposed oppositely of the corresponding connection means on the inside vamp portions in generally perpendicular relation to said longitudinal axis,

(c) fastening means connected between said upper vamp portion connection means extending across said longitudinal axis tending to apply perpendicular tension forces to the upper vamp section when tension is applied to the fastening means,

(d) connection means on the lower inside vamp portion and connection means on the lower outside vamp portion, the connection means on the inside vamp portion being disposed forwardly of the corresponding connection means on the outside vamp portion the angle of inclination between corresponding connection means on the lower



inside vamp portion and the lower outside vamp portion corresponding substantially to the metatarsal break, and

(e) fastening means connected between said lower vamp portion connection means extending across said longitudinal axis and tending to apply diagonal tension forces to the lower vamp section generally in the direction of the metatarsal break when tension is applied to the fastening means.

4,622,764

SHOES WITH SUPPLE SOLES, NOTABLY SPORTS-SHOES

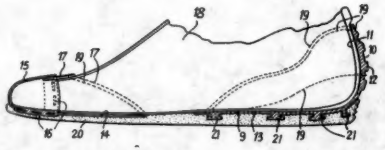
Maurice Boulier, Incarville Louviers, France, assignor to Societe Technisynthese Sarl, Saint Pierre Montlimart and Sarl Chaussures Labelle, Saint Pierre du Vauvray, both of, France

Filed Nov. 13, 1984, Ser. No. 670,921

Claims priority, application France, Nov. 14, 1983, 83 18031

Int. Cl.[4] A43B *23/08*

U.S. Cl. 36—68 **4 Claims**



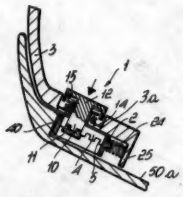
1. A shoe comprising a molded shell extending at least underneath the heel of the wearer up to the level of the plantar arch of the wearer, said molded shell being incorporated in an upper of the shoe with its lower surface in direct contact with the upper surface of a sole of the shoe made of an injection molded plastic material, said shell comprising a peripheral edge extending downwardly of said lower surface of the shell, said peripheral edge surrounding and contacting the side walls of the upper portion of the injection molded sole which supports said upper surface.

4,622,765

STRUCTURE OF A DEVICE FOR VARYING THE INCLINATION IN SKI BOOTS

Mirko Baratto, Valdobbiadene, and Alfio Leonardi, Milan, both of Italy, assignors to Nordica S.p.A., Montebelluna, Italy

Filed Aug. 26, 1985, Ser. No. 769,511
Claims priority, application Italy, Sep. 6, 1984, 23030/84[U]
Int. Cl.[4] A43B 5/04
U.S. Cl. 36—120 12 Claims



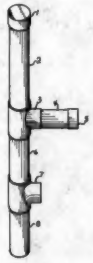
1. A structure of a device for varying the inclination in ski boots, including two mutually movable parts, said device comprising at least an engagement block and an abutment detent, said engagement block being releasably lockable in a presettable position of one of said two mutually movable parts and engageable with said abutment detent, defined on the other of said two mutually movable parts.

4,622,766

HAND HELD SUCTION NOZZLE WITH METAL DETECTOR

Gary R. Hall, 6089 Sanibel-Captiva Rd., Sanibel Island, Fla. 33957

Filed Jun. 3, 1985, Ser. No. 740,503
Int. Cl.[4] E02F 3/88
U.S. Cl. 37—58 1 Claim



1. Apparatus for detecting and dredging metallic objects comprising:

a hand held suction nozzle including a handle portion to be grasped by an operator, a suction inlet, a connection leading to a suction source and a tube joining the suction inlet to the handle portion;

a metal detector slidably attached to the suction nozzle,

a clamp assembly for attaching said metal detector to said nozzle including a first ring loosely fitted around the suction nozzle for sliding movement and secured to the metal detector by a plurality of mounting legs, a bar fixed to said ring and extending along said suction nozzle and said tube, and a second ring loosely encircling said tube for sliding movement and fixed to said bar,

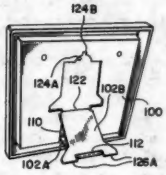
whereby upon detection of a metal object by said detector said suction nozzle may be slidingly moved through said rings into the proximity of said detected object for removal thereof by suction.

4,622,767

EASEL-LIKE SUPPORT

Stephen P. Sullivan, Dayton, Ohio, assignor to The Antioch Publishing Company, Yellow Springs, Ohio

Filed Mar. 28, 1985, Ser. No. 717,214
Int. Cl.[4] G09D 3/04
U.S. Cl. 40—120 12 Claims



1. A support structure for a calendar pad, photograph or the like comprising:

a generally planar and rectangular single sheet of a relatively rigid material, said sheet having lower and upper edges;

a tongue of said material having one end thereof hingedly connected to said sheet near the lower edge thereof and extending toward and terminating at an opposite end near the upper edge of said sheet, said tongue having a first generally rectangular portion and a second generally rectangular portion wider than said first rectangular portion extending beyond said first portion and hingedly connected to said first portion to permit movement of said second portion toward the front of said sheet; and

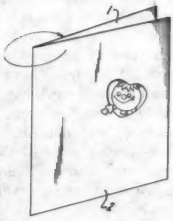
first and second notches formed into said sheet on opposite sides of said first portion of said tongue and near the point where said second portion of said tongue is hingedly connected to said first portion, said second portion of said tongue having the corners of a distal end thereof cut away or otherwise removed to form a tab at the distal end of said second portion, which tab is sized to fit within said notches and extend therebetween; whereby said first rectangular portion may be folded toward the rear of said planar sheet and said second rectangular portion may be folded toward the front of said planar sheet, said first and second rectangular portions being positioned such that said tab engages said notches to form a stable angular prop extending from the rear of said planar sheet to support said planar sheet in an inclined orientation for displaying whatever is secured to the front of said planar sheet.

4,622,768

REVERSIBLE AND ADVERTISING GREETING CARD

Claude R. M. Moreau, 85-06 60th Ave., Elmhurst, N.Y. 11373

Filed Feb. 25, 1985, Ser. No. 705,509
Int. Cl.[4] B42D 15/02
U.S. Cl. 40—124.1 1 Claim



1. A two-in-one reversible card suitable for greetings and a

variety of other occasions and circumstances, bearing a number of interacting, complementary or unrelated exhibits which can be dislayed at will through alternate selections, according to the user's choice, comprising:

a single sheet of material defining first and second sheet-like panels;

said first sheet-like panel bearing thereon first printed matter and having a first cutout opening defined in said panel;

said second sheet-like panel bearing thereon second printed matter and having a second cutout opening defined in said second panel;

said sheet of material including a fold line separating said first and second panels for relative movement of said panels about said fold line between a first position in which said first panel substantially flatly overlies said second panel and a second position in which said second panel substantially flatly overlies said first panel; and

said first and second cutout openings being defined in said first and second panels in relatively offset and non-overlapping relation, and said first and second printed matter being disposed on said first and second panels, so that at least a portion of said second printed matter is aligned with and visible through said first cutout opening in said first position of said panels for conveying a composite message or idea or illustration formed by combining said first printed matter and said portion of said second printed matter to thereby convey a first idea or message and thereby provide a first function of said card, and so that at least a portion of said first printed matter is aligned with and visible through said second cutout opening in said second position of said panels for conveying a composite message or idea or illustration formed by combining said second printed matter and said portion of said first printed matter to thereby convey a second idea or message and thereby provide a second function for said card, such that said card provides a choice of selection to the user and a choice of display to the seller.

4,622,769

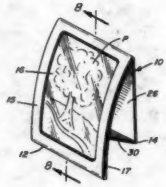
COLLAPSIBLE DIE-CUT PICTURE FRAME

Arthur S. Friedman, 2144 Seneca Dr. W., Merrick, N.Y. 11566

Filed Sep. 5, 1985, Ser. No. 772,698

Int. Cl.[4] A47G *1/06*; G09F *1/12*

U.S. Cl. 40—152.1 **8 Claims**



1. A collapsible one piece picture frame assembly which is covexly bowed in use consisting of a single cardboard blank scored along three parallel lines to provide four panels, one end panel and the immediately adjacent panel comprising, when folded in juxtaposition, the frame between which a picture may be inserted, said one end panel having die cut therefrom a lock slot, a rigidifying locking tongue support and glue tab means on the end thereof, said immediately adjacent panel having a die-cut picture-viewing window therein, said other end panel serving as an easel brace and having its free end defining a lock tongue adapted to engage within said lock slot to hold said frame in its erected position, said glue tab means adapted to be secured to a face of said easel brace, said remaining panel serving when the frame assembly is erected as a support for the frame.

4,622,770

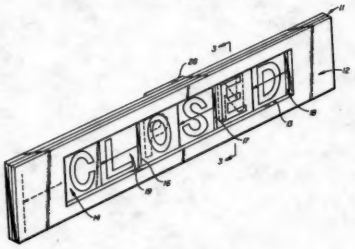
OPEN-CLOSED SIGN

John Howard, 2230 Durant Ave. #204, Berkeley, Calif. 94704

Filed Feb. 11, 1985, Ser. No. 700,492

Int. Cl.[4] G09F *11/00*

U.S. Cl. 40—491 **3 Claims**



1. In a sign intended to convey the words "OPEN" or "CLOSED" alternatively, the improvement comprising (1) a back panel containing six display spaces; the first being blank, the second bearing the letter "L", the third "P", the fourth "S", the fifth "N" and the sixth "D"; (2) a slidable middle panel, shiftable between a left mode and a right mode containing seven display spaces corresponding in size to those in the back panel; the first bearing the letter "C", the second, fourth and sixth spaces being apertures for viewing through the middle panel to the back panel, the third space bearing the letter "O", the fifth bearing the letter "E", and the seventh being blank; (3) a front panel having a width of eight spaces corresponding in size to those of the middle and back panels enclosing an aperture six spaces in width and a solid panel on each side of the aperture at least as wide as a single space, whereby the left-hand solid front panel covers the letter "C" of the first space of the middle panel when the middle panel is shifted to the left-hand mode of the sign as viewed from the front and (4) registry means to allow the aperture of the front panel to display the word "OPEN" when the middle panel is in the left mode and the word "CLOSED" when the middle panel is in the right mode.

4,622,771

COMMUNICATION DISPLAY DEVICE

Charles W. Spengler, 3310 Deforest Ave., Cincinnati, Ohio 45209

Filed Jul. 1, 1985, Ser. No. 750,519

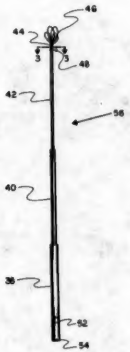
Int. Cl.[4] G09F *13/00*

U.S. Cl. 40—547 **15 Claims**

1. A communication display device comprising a see-

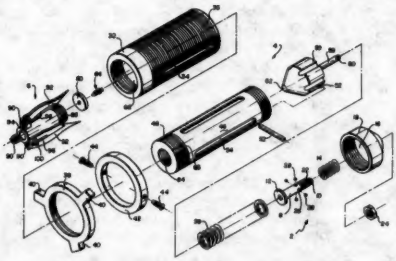
through tubular structure in the form of an animal, said structure having substantially fixed body, torso, head and limb tubular parts having diameters in the range of about $\frac{3}{4}$ to about 1 inch, said tubular structure providing the means for communication verbally or nonverbally with an observer without precluding the observer from seeing merchandise or other items which may be behind said structure.

4,622,772
FISHING LURE RETRIEVER
James M. Cawley, 2701 Greendale Dr., Sarasota, Fla. 33582, and John W. Chonody, 807 Church St., Nokomis, Fla. 33555
Filed Feb. 11, 1985, Ser. No. 700,524
Int. Cl.[4] A01K *97/00*
U.S. Cl. 43—17.2 **23 Claims**



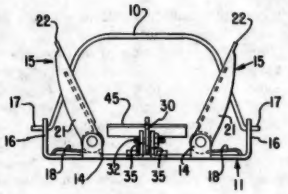
1. A fishing lure retriever, comprising:
an elongated pole; and
a plurality of loops made of a resilient strand material, said loops being flexible and capable of being compressed into a flattened arrangement around a lure but having sufficient stiffness to recover and maintain their loop shape; and
means for securing said loops to one end of said pole so that said loops extend from said one end of said pole.

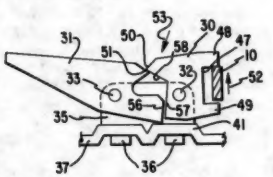
4,622,773
FISHING LURE ASSEMBLY WITH EXPLOSIVE PROJECTILE
Juanito B. Calagui, P.O. Box 46229, Fahaheel, Kuwait (E-15)
Filed Feb. 14, 1985, Ser. No. 701,688
Int. Cl.[4] A01M *27/00*; A01K *83/00*
U.S. Cl. 43—43.16 **18 Claims**



1. A fishing lure for use with a projectile for incapacitating large ocean going fish, comprising;
a barrel assembly adapted to receive an explosive cartridge, and having a plurality of hooks pivotally secured externally thereof;
a main housing connected to said barrel assembly, said main housing having a hammer assembly and a firing pin assembly disposed therein, said hammer assembly being independently movable with respect to said firing pin assembly; said firing assembly being movable for contact with an explosive cartridge in the barrel assembly; said hammer assembly including outward extending lugs, said main housing having axially extending slots receiving said lugs and removable means extending into said slots for engaging said lugs on said hammer assembly;
a trigger assembly connected to said main housing, said trigger assembly including release means for engaging said hammer assembly in a first cocked position and for disengaging said hammer assembly from said first cocked position; and
means for activating said release means to cause said hammer assembly to move from said first cocked position to a second release position, whereby said hammer assembly is cause to strike said firing pin assembly and thereby caused the cartridge to be fired and a projectile to be discharged from said barrel assembly upon firing of the explosive cartridge.

4,622,774
ANIMAL TRAP
Ambrose F. Block, Rte. 3-Box 26, Woonsocket, S. Dak. 57385
Filed Mar. 11, 1985, Ser. No. 710,706
Int. Cl.[4] A01M *23/26*
U.S. Cl. 43—88 **10 Claims**





7. For a trap having jaws adapted to move from a set position to a closed position, trigger means including spaced apart parallel side portions, seer means pivotally mounted between said side portions, said seer means being formed to provide a point having a lower surface, said seer means having an engagement face, extending downwardly from said lower surface, trigger lever means also pivotally mounted between said side portions adjacent to said seer means, said lever means having a set position and a release position corresponding to said set position and said closed position of said jaws, said seer means being formed to receive at least one of said jaws to hold said jaw, said lever means being adapted to interfere with motion of said seer means when said lever means is in its set position and to release said seer means when said lever means is in its released position, said lever means having a trigger surface adjacent said lower surface and adapted to engage said

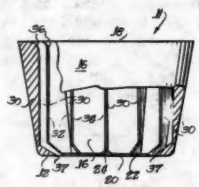
lower surface in said set position, said point being of such length to be free from said trigger surface in the release position of said lever means, said trigger means also having a contact surface adjacent to said engagement face of said seer means, said contact surface being disengaged from said engagement face in the set position, but being engaged as said lever means moves to the release position.

4,622,775

HYDROPONIC PLANT COLLARS

Edward P. Glenn, and Frank Gething, both of Tuscon, Ariz., assignors to Kraft, Inc., Glenview, Ill.

Continuation of Ser. No. 445,655, Nov. 30, 1982, abandoned.
This application Apr. 9, 1985, Ser. No. 721,493
Int. Cl.[4] A01G *31/00*
U.S. Cl. 47—63 **13 Claims**



1. A collar molded as a unitary structure for hydroponic culture adapted for supporting a plant by the base of its stem and a small portion of the root structure attached thereto, the collar comprising

a frustoconical upstanding sidewall having a broader upper end and a narrower lower end,

plant supporting cross struts at said lower end,

a plurality of vertical foils extending inward from said sidewall and downward to said lower end to prevent the roots of the plant from spiraling around said sidewall,

said foils each having parallel side surfaces and a substantially vertical inner edge extending along a line which runs closely adjacent to said lower end of said sidewall, and

said foils having protrusions at their lower ends which extend radially inward for retaining solid plant-supporting material within said collar,

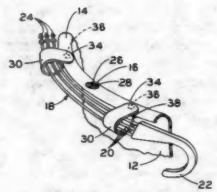
said struts and said inwardly extending protrusions leaving an open bottom area equal to at least about 75 percent of the area of said lower end to allow the major portion of the roots of the plant, at maturity, to extend therethrough into an aqueous nutrient medium, and said collar presenting substantially no obstruction to direct downward growth of plant roots between said vertical foils.

4,622,776

HANGING PLANTER

Peter R. Pfaff, North Arlington, N.J., assignor to Missry Associates, Inc., Dunellen, N.J.

Filed Jul. 11, 1985, Ser. No. 753,891
Int. Cl.[4] A01G *9/02*
U.S. Cl. 47—67 **6 Claims**



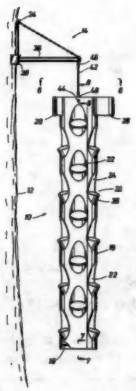
1. In a hanging planter of the type comprising a pot section and a separable suspension assembly having a plurality of stringers adapted to be secured to the peripheral edge of said pot section, the improvement to said planter comprising a lip on said pot section and an attachment means integral with said lip and having flexible means thereon releasably engageable with said pot section for enclosing and for holding said suspension assembly to said pot section in an inoperative position along a side of said pot section and comprising a plurality of said releasably engageable attachment means on said pot section at spaced intervals about and along a side of said pot section and in which said suspension assembly is inserted and releasably held in an inoperative position alongside said pot section as a part thereof and against accidental separation from said pot section to discourage pilferage and separation therefrom.

4,622,777

PLANTER AND METHOD OF PRODUCING SAME

George J. Greene, Jr., 616 N. Eldridge, Houston, Tex. 77079

Continuation of Ser. No. 505,102, Jun. 10, 1983, abandoned.
This application Sep. 26, 1984, Ser. No. 660,452
Int. Cl.[4] A01G *9/02*
U.S. Cl. 47—67 **3 Claims**



1. An improved hanging planter structure comprising:

an elongated tubular cylindrical planter having a bottom, an open upper end, and a plurality of planting pockets spaced axially and circumferentially along the outer surface of the tubular planter, each of said pockets communicating with the inside of the planter and defined between an upper inwardly extending recess and a lower outwardly extending projection, said pockets adapted to receive plants upon filling of the inside of the planter with suitable planting soil;

a support pin mounted on said planter and extending across the open upper end thereof, a ropelike support for the tubular planter having its lower end secured to said support pin and its upper end secured to an overhead support means thereby to suspend the planter from the overhead support means;

a plurality of fins secured in circumferentially spaced relation about and extending laterally outwardly from the outer circular surface of the elongated cylindrical planter adjacent the upper end thereof; and

means mounting said fins on said planter adjacent the lower end of the ropelike support to receive an air current or wind for rotation of the planter about its longitudinal axis thereby to expose plants therein to desired light, the rotation of the planter in one direction resulting in a twisting

of the ropelike support which progressively increases its resistance to such rotation of the planter upon a continuous rotation of the planter in said one direction.

4,622,778

LATCH AND CORNER SUPPORT FOR PIVOTAL WINDOW SASH

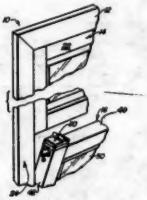
Harold Simpson, Chicago, Ill., assignor to Ashland Products Company, Chicago, Ill.

Filed Jul. 29, 1985, Ser. No. 759,901

The portion of the term of this patent subsequent to Apr. 1, 2003, has been disclaimed.

Int. Cl.[4] E05D *15/22*

U.S. Cl. 49—161 **21 Claims**



1. A window sash adapted for installation in the frame of a double-hung window assembly, the window assembly frame having opposed, vertically extending guide rails to enable vertical reciprocal sliding movement of the sash in the window assembly frame while cooperatively engaged with the guide rails and a sash balance mechanism to enable pivotal movement of the sash relative to the window assembly frame while cooperatively engaged with the sash balance mechanism, the sash comprising a frame having at least a header and a pair of stiles connected together at adjacent ends, said header and stiles being extruded from a plastic material to cross-sectional configurations, the internal cross-sectional configurations of at least the stiles being identical; and

the cross-sectional configurations of said stiles including at least one hollow formation therethrough opening to opposite ends thereof and the ends of said header and stiles being right-angled in their configuration to facilitate assembly into right-angled butt joints at the corners;

at least said header and stiles being connected together with right-angled butt joints with the ends of said stiles being open to expose the hollow configurations of said stiles to the exterior of said sash; and

two combination support and cover members each including a depending leg segment and a cover segment arranged perpendicular to one another, the leg segment having a cross-sectional configuration complementary to that of the stiles selected to enable engagement of said leg segment in the hollow formation of a stile through the open ends thereof, the cover segment being arranged to close at least partially the open top end of a stile from exterior of said sash, the leg segment supporting said cover segment,

each of said support and cover members including latch means having a latch bolt extending beyond its respective stile and adapted to engage with one of said guide rails, and means operable from external said sash frame for releasing said latch means selectively to facilitate release of the sash for pivoting of same.

4,622,779

METHOD AND APPARATUS FOR SPEED CONTROL OF A GRINDER

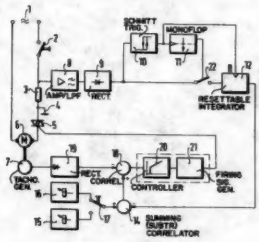
Fritz Schadlich, Leinfelden-Echterdingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 26, 1984, Ser. No. 686,282

Claims priority, application Fed. Rep. of Germany, Jan. 11, 1984, 3400672

Int. Cl.[4] H02P *5/00*; B24B *5/00*

U.S. Cl. 51—134.5 R **8 Claims**



6. Apparatus for controlling the rotary speed of a grinding wheel driven by an electric motor energized by electric current supplied to said motor at an operating voltage, with compensation of the rotary speed for change in diameter of the grinding wheel, comprising tachogenerator means for producing a first electrical signal repersentative of actual rotary speed of said grinding wheel, and further comprising:

means for defining a measuring interval of fixed duration during each start-up interval of the motor;

means for integrating said first signal representative of actual rotary speed during said measuring interval and storing the integration result to produce a stored integrator output signal;

means for providing a second electrical signal representative of a predetermined reference speed of said grinding wheel;

means for augmenting said second signal representative of a predetermined reference speed by said stored integrator output signal to produce a modified reference speed signal;

means for comparing said first signal representative of actual rotary speed with said modified reference speed signal to produce a difference signal, and

means repsonsive to said difference signal for controlling the speed of said mtoor in a manner minimizing said difference signal.

4,622,780

GLASS SCRATCH REMOVAL APPARATUS AND METHOD

Eddie S. Tingley, Bloomington, Minn., assignor to Novus Inc., Minneapolis, Minn.

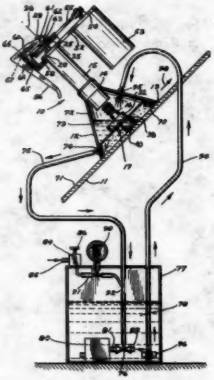
Filed Feb. 11, 1985, Ser. No. 700,636

Int. Cl.[4] B24B *23/00*

U.S. Cl. 51—170 T **13 Claims**

1. Apparatus for maintaining a rotating tool in a desired orientation with the axis of rotation of the tool generally normal with respect to a surface comprising a substantially continuous skirt generated about a central axis and tapering from a first end to a second end; means adjacent the second end for supporting the rotating tool for rotation, the means for supporting extending toward the first end, the first end of the skirt having an edge substantially defining a plane, and said tool being movable axially to align with the plane; and means for controlling movement of said tool toward and away from said plane, said skirt being flexible to permit the edge at the first end of the skirt to move out of said plane to conform to nonplanar

portions of a surface on which the edge of the first end of the skirt is placed, a continuous peripheral seal at the first end of the skirt to seal against the surface on which the first end of the skirt is placed, and means for providing a liquid flow into the



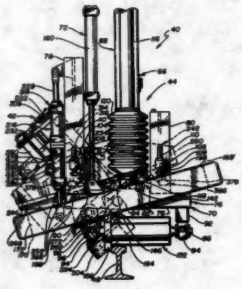
interior of said skirt and out from said skirt at locations other than the edge of the skirt, said peripheral seal defining an enclosed chamber in said skirt when the skirt engages a surface.

4,622,781

RAIL GRINDING MACHINE

Robert G. Vieau, Plymouth; Truman A. Anderson, Minneapolis, and Kevin C. Johansen, Mound, all of Minn., assignors to Loram Maintenance of Way, Inc., Hamel, Minn.

Filed Feb. 19, 1985, Ser. No. 702,483
Int. Cl.[4] B24B *23/00, 27/08*
U.S. Cl. 51—178 **8 Claims**



1. A rail grinding machine for restoring the surface of railroad track rails, said grinding machine including a main frame supported on said track by rail engaging wheels and adapted for travel along said rails comprising:

a grinding module including a grinding head adapted for contacting one of said rails in grinding relationship; and

a carriage assembly operably coupling said grinding module to said main frame, said carriage assembly including:

carriage support structure depending from said main frame and positionable in fixed relationship with said rail surface;

a carriage tilt frame pivotally coupled to said carriage support structure at a tilt frame pivot axis oriented directly above said rail surface when said carriage support structure is in said fixed relationship with said rail surface; and

grinding module attachment means for operably, pivotally coupling said module to said tilt frame at a grinding module attachment means pivot axis,

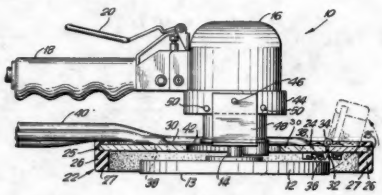
whereby said grinding module can be tilted through a first angle relative to said tilt frame, and said tilt frame can be tilted through a second angle relative to said carriage support structure, such that said grinding head is shiftable about said rail surface through a third angle equaling the sum of said first and second angles.

4,622,782

SANDER SHIELD

Jerome R. Roestenberg, 11 Woodpecker La., Levittown, N.Y. 11756

Filed Aug. 9, 1985, Ser. No. 764,041
Int. Cl.[4] B24B *55/06*
U.S. Cl. 51—273 **9 Claims**



1. A vacuum shield for an abrading part of an abrading machine, comprising:

a generally planar top wall mounted on the abrading machine; the top wall of the shield being made of a rigid transparent material and comprising at least a first segment and a second segment; the first segment having a first hole therein, through which the abrading part can be supported and driven by the abrading machine; the first segment also having a plurality of second holes therein, each second hole being connected to a vacuum hose on top of the top wall and providing pneumatic communication through the top wall between the hose and the abrading part; and the second segment being pivotally connected to the first segment for upward pivotal movement of the second segment about its connection to the first segment; and

a flexible skirt depending from the peripheral edge of the top wall and extending substantially continuously along the entire length of the peripheral edge of the top wall; the skirt being a continuous elastomeric member substantially surrounding horizontally the abrading part of the abrading machine, even when the second segment is pivoted upwardly relative to the first segment.

4,622,783

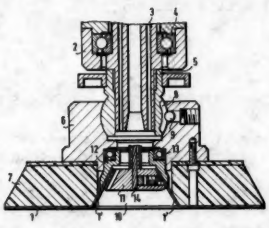
ARRANGEMENT FOR FASTENING A GRINDING DISK ON A ROTATABLE GRINDING PLATE OF A GRINDING APPARATUS

Dieter König; Heinz Schickhaus, both of Munich, and Johann Müller, Ismaning, all of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 615,816, May 31, 1984, abandoned.
This application Feb. 14, 1986, Ser. No. 829,556
Claims priority, application Fed. Rep. of Germany, Jun. 1, 1983, 3319925
Int. Cl.[4] B24D *9/08*
U.S. Cl. 51—376 **17 Claims**

1. An installation for fastening a grinding sheet on a rotatable grinding disk of a grinding apparatus, in which the grinding sheet includes bendable fastening tabs and is operable to be secured on the grinding disk by clamping means by way of said

fastening tabs, comprising clamping means for retaining the fastened grinding sheet relatively rotatable with respect to the



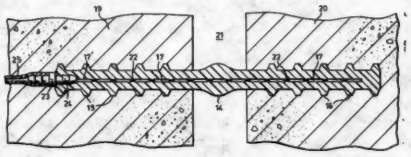
grinding disk and having cooperative clamping elements also rotatable with respect to the disk.

4,622,784

PRESSURIZED WATERSTOPS

David A. Black, 9 Golf Crest Road, Islington, Ontario, Canada M9A 1L2, and John J. F. Deans, 352 Coxe Boulevard, Milton, Ontario, Canada (L9T 4N3)

Filed Dec. 18, 1984, Ser. No. 683,228
Int. Cl.[4] E04F *15/14*; E01C *11/10*
U.S. Cl. 52—2 **11 Claims**



1. A waterstop for use in concrete structures consisting of an elongate strip of elastomeric material, the strip being of uniform cross section throughout its length and having a medial portion extending between side wing anchor portions, wherein the strip is formed with a plurality of internal cavities extending throughout its length, the cavities being transversely spaced by thin wall sections which are pierced to provide transverse passages which interconnect the cavities for equalizing fluid pressure therein, and said side wing anchor portions providing inlet means for interconnecting the cavities with a fluid supply for internally pressurizing the waterstop.

4,622,785

APPARATUS FOR ATTACHMENT TO THE SIDE OF A BUILDING FOR HOLDING A RAIN GUTTER IN PLACE

Melvin L. Miller, 395 Highland Dr., Payette, Id. 83661

Filed Dec. 23, 1985, Ser. No. 812,077
Int. Cl.[4] E04D *13/00*
U.S. Cl. 52—11 **6 Claims**

1. A gutter and apparatus for positioning the same, comprising:

positioning means for attachment to the side of a building for holding the gutter in place, said positioning means including first gutter holding means,

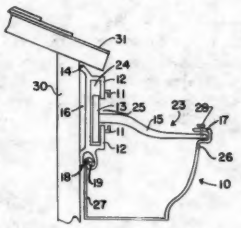
said gutter comprising an upwardly extending gutter wall to be positioned alongside said side of said building, said first gutter holding means holding said gutter wall in place,

said gutter having a second upwardly extending wall spaced farther away from the building than said first-named wall, said second upwardly extending wall having an upper end,

said positioning means having first and second walls, said first wall being adjacant said side of the building and said second wall spaced farther from the building than the first wall, said second wall defining an opening extending through said second wall,

a cantilever arm extending from said cavity, through said opening, and above said gutter, and supporting the upper end of said second upwardly extending wall of said gutter,

the portion of said cantilever arm that is in said cavity having an end in said cavity that is enlarged vertically to comprise an enlargement that is higher in the vertical direction than the vertical height of said opening but shorter in the vertical direction than said cavity,



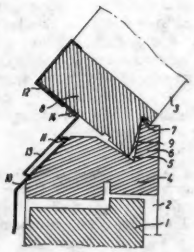
said enlargement having upper and lower ends so that the downward force of the gutter on said cantilever arm will force said upper end of said enlargement against a portion of said second wall of said positioning means and will force said lower end of said enlargement against said first wall of said positioning means, whereby to hold said enlargement in place in said cavity, said portion of said second wall being above said opening.

4,622,786

COMPOSITE WINDOW FOR ATTIC APARTMENTS

Per G. Nielsen, Horsens, Denmark, assignor to V. Kann Rasmussen Holding A/S, Soborg, Denmark

PCT No. PCT/DK85/00001, § 371 Date Aug. 12, 1985, § 102(e) Date Aug. 12, 1985, PCT Pub. No. WO85/03100, PCT Pub. Date Jul. 18, 1985
PCT Filed Jan. 11, 1985, Ser. No. 775,512
Claims priority, application Denmark, Jan. 13, 1984, 153/84
Int. Cl.[4] E04D *13/02, 13/14*; E06B *1/34*
U.S. Cl. 52—58 **1 Claim**



1. A composite window intended for attic apartments and comprising a skylight component adapted for inclined installation and a wall component, said components having separate frames including a bottom member and a top member, respectively, adapted to be united with one another in the area of the eaves of a roof, the window further comprising a prefabricated outer covering on the united frame members, wherein the bottom member of the frame of the skylight component rests on the top member of the frame of the wall component so as to be tiltable on a horizontal axis, and that the covering includes

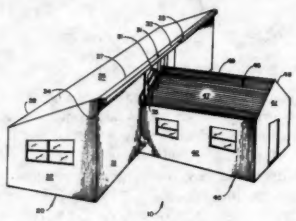
an angular gusset plate having a first flange which abuts the lower surface of the bottom member of the skylight frame and is overlapped by a covering member thereon, and a second flange which displaceably overlaps a covering member mounted on the top member of the frame of the wall component, and further wherein, in its inner face, the bottom member of the skylight frame presents a groove of triangular cross-sectional configuration and with the bottom of this groove riding on the top edge of a ridge on the frame top member of the wall component of the window, said ridge being also triangular in cross-section and having a top angle that is substantially smaller than a bottom angle of the groove.

4,622,787

MULTIPLE UNIT HOUSING SYSTEM

Samuel P. Scott, Blackshear, Ga., assignor to Scott Housing Systems, Inc., Waycross, Ga.

Filed Jan. 31, 1985, Ser. No. 696,779
Int. Cl.[4] E04D *1/36;* E04B *1/348*
U.S. Cl. 52—58 **2 Claims**



1. A multiple unit, transportable, housing system, comprising:

a first living unit comprising a plurality of side walls, at least one of said side walls being an abutment side wall, said abutment side wall including a lower edge and an upper edge supported in spaced relationship above said lower edge;

overhang member supported from said upper edge of said abutment side wall, said overhang member defining an inverted trough along at least a portion of said upper edge;

a second living unit comprising a plurality of side walls, at least one of said side walls being an engagement side wall, said engagement side wall including a lower edge and an upper edge supported in spaced relationship above said lower edge, said upper edge of said engagement side wall being supported above said lower edge of said engagement side wall at an angle to said lower edge;

flange member supported from and protruding vertically from said upper edge of said engagement side wall;

each of said first living unit and said second living unit being independantly and permanently mounted on a wheeled trailer and separately transportable from one location to another;

said abutment side wall and said engagement side wall being placed adjacent one another, said flange member of said second living unit abutting said abutment side wall of said first living unit, said flange member abutting said abutment side wall at a location below said overhang member thus defining a tapered gap between said flange member and said overhang member, and said inverted trough of said overhang member of said first living unit protruding beyond said abutment side wall to hang over said flange member;

removable, tapered plate member occupying said tapered gap, a portion of said plate member being positioned within said inverted trough of said overhang member and a portion of said flange member being sandwiched between said plate member and said abutment side wall;

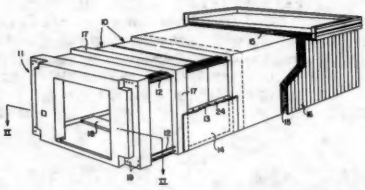
whereby the first and second living units are separately transportable to a set up location, are movable into abutment, and combine to form a multiple housing system wherein the overhang member, flange member and taper plate member combined to assist in leak prevention between the first and second living units.

4,622,788

BUILDING STRUCTURE, ESPECIALLY AIR RAID SHELTER

Jan-Erik H. Paulsson, Malmö , and Lars-Göran F. Blixt, Lyckeby, both of Sweden, assignors to Lars-Göran Franklin Blixt, Lyckeby, Sweden

PCT No. PCT/SE82/00254, § 371 Date Apr. 4, 1983, § 102(e) Date Apr. 4, 1983, PCT Pub. No. WO83/00522, PCT Pub. Date Feb. 17, 1983
PCT Filed Aug. 5, 1982, Ser. No. 486,293
Claims priority, application Sweden, Aug. 7, 1981, 8104738
Int. Cl.[4] E04H *9/04;* E04B *1/343*
U.S. Cl. 52—79.11 **16 Claims**



1. An air raid shelter comprising a number of adjoining, prefabricated, reinforced, tubular concrete elements (**10**) and end wall elements (**11**) clamped together with the aid of prestressing means (**12**), wherein each of the tubular concrete elements (**10**) has at least one exteriorly, interiorly or both exteriorly and interiorly protruding, reinforced stiffening beam (**17, 18**) integral with the remaining concrete element and having holes (**19**) formed in the axial direction of the tubular concrete elements for the prestressing means (**12**) to pass through, which prestressing means are anchored to the end wall elements and serve to clamp together the tubular concrete elements (**10**) between the end wall elements (**11**), and wherein interstices are formed between the stiffening beams (**17, 18**) of adjoining concrete elements (**10, 11**) and said interstices are filled with reinforced in situ cast concrete (**13**) for permanent interconnection of the concrete elements (**10, 11**) and embedding of the prestressing means (**12**) so as to form prestressed concrete.

4,622,789

ROOFING SYSTEMS

Geoffrey C. Quinnell, Pembury, England, assignor to Marley Tile A.G., Zurich, Switzerland

Filed Aug. 23, 1984, Ser. No. 643,379
Claims priority, application United Kingdom, Aug. 30, 1983, 8323160; Mar. 19, 1984, 8407049
Int. Cl.[4] E04D *13/16*
U.S. Cl. 52—95 **8 Claims**

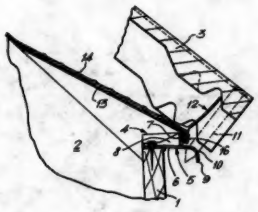
1. A roofing system with eaves comprising:

(a) a roof covering;

(b) a support member for the roof covering at the eaves of the system;

(c) an element extending inwardly from the support member, the element resting on the support member in a readily pivotal manner and engaging a further component of the roofing system beneath the roof covering whereby the element may adapt to different roof pitches; and,

(d) a filler member attached to the element such that the filler member extends at a predetermined inclination with



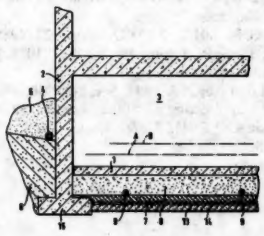
respect to the roof covering for effective engagement therewith.

4,622,790

DEVICE FOR RELIEVING FLOORS ON GROUND IN BUILDINGS

Jan E. Johansson, Havberg 1, S-274 00 Skurup, Sweden

Filed Mar. 27, 1985, Ser. No. 716,389
Claims priority, application Sweden, Apr. 2, 1984, 8401795
Int. Cl.[4] E04D *27/01, 27/32*
U.S. Cl. 52—169.5 **11 Claims**



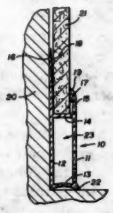
1. Device for relieving floors on ground in buildings, characterized in that between the floor (1) and a sealing layer (7) for preventing the underground water from coming through to the floor, a relieving layer (8) is provided to carry, along with the floor, the pressure load applied onto the sealing layer by the underground water.

4,622,791

BASE MOLDING

Melvin W. Cook, Dover, and Carl J. Schmidt, Alliance, both of Ohio, assignors to Masonite Corporation, Chicago, Ill.

Filed Mar. 21, 1985, Ser. No. 714,365
Int. Cl.[4] E04B *2/74*
U.S. Cl. 52—241 **10 Claims**



1. A base molding adapted to be mounted against a vertical wall structure at or near a floor to receive and engage one or more wall panels each having lower edges and to support said wall panel lower edges at a position elevated above the level of said floor, said base molding comprising an integral unitary structure formed by extruding a plastic material and comprising:

a rear wall having a lower end,

a front wall having a lower end,

a bottom wall connecting the lower end of said front wall and the lower end of said rear wall in spaced-apart relationship, the outer surface of said bottom wall being concave and terminating in a toe at the junction of said bottom wall and said front wall and adapted to receive a sealant for sealing said base molding to said floor,

a panel support web connecting said front and rear walls at a position spaced from said bottom,

a back nailing flange extending as an integral portion of said rear wall above its connection with said panel support web, and

a face flange extending from said front wall as an integral portion thereof and above said panel support web,

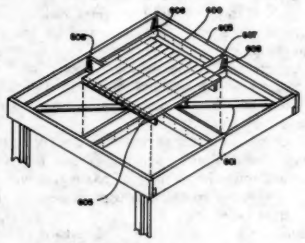
said back nailing flange, said panel support web, and said face flange cooperating to define a channel adapted to receive the lower edge of a wall panel and to support said panel at a position elevated above said floor.

4,622,792

MODULAR DECK STRUCTURE AND METHOD FOR CONSTRUCTING SAME

Daniel L. Betts, Lorton, Va., assignor to Champion Building Systems, Inc., Lorton, Va.

Continuation-in-part of Ser. No. 615,743, May 31, 1984, abandoned. This application Nov. 19, 1985, Ser. No. 800,049
Int. Cl.[4] E04B *1/00*
U.S. Cl. 52—263 **20 Claims**



1. A modular structure comprising:

a plurality of rectangular flooring platforms;

border and interior joists that intersect in criss-cross fashion to from a plurality of rectangular frames where the border joists include a first and a second pair of spaced periometer joists, the first pair being unnotched and the second pair being notched only on the ends of the joists; and

planks coupled to extend along the interior surface of at least two joists of each rectangular frame;

said each rectangular frame and the planks coupled thereto being dimensioned to enable at least one of said platforms to be seated within a corresponding frame and to be supported by the plants coupled thereto;

wherein said interior joists have at least one end with a notch therein; and

wherein pairs of joists are joined at respective intersection points thereof by positioning a notched end of a second criss-crossing joist on the plank along a first criss-crossing joist, the second joist being supported at one end by the plank of said first criss-crossing joist.

4,622,793

MOVEMENT-REGULATING MECHANISM FOR A SEALING DEVICE

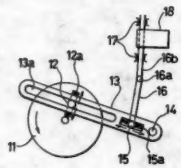
Yasuo Oki, Tomioka, Japan, assignor to Orihiro Co. Ltd., Japan

Filed Apr. 15, 1985, Ser. No. 723,096

Claims priority, application Japan, Nov. 27, 1984, 59-178696[U]

Int. Cl.[4] B65B 51/30, 51/14

U.S. Cl. 53—373 5 Claims



1. A movement-regulating mechanism for a transverse sealing device having transverse sealing means, comprising:

a cranking disc with a center of rotation, said cranking disc being mounted for rotation at a fixed location about its center or rotation;

a crank pin mounted for movement in a radial direction to said cranking disc;

radial movement means connected to said crank pin for moving said crank pin to adjustable radial positions on said cranking disc;

a transverse rod having having an elongated longitudinal direction, said transverse rod having an elongated slot extending in said longitudinal direction for slidably receiving said crank pin;

a support shaft operatively connected to said transverse rod at a location spaced from said longitudinal slot thereof, for pivotally supporting said transverse rod so that, with rotation of said cranking disc, said crank pin slides in said elongated slot to pivot said transverse rod;

a pivot connected to said transverse rod for sliding movement in the longitudinal direction of said transverse rod;

longitudinal movement means connected to said pivot for moving said pivot to selected longitudinal positions with respect to said transverse rod, said pivot always being from said support shaft;

a vertical rod pivotally connected to said pivot and movable in a vertical direction by pivoting of said transverse rod, said vertical rod being connected to the transverse sealing means for vertical up and down movement of the transverse sealing means; and

guide means for guiding said vertical rod for movement in the vertical direction.

4,622,794

PANEL WALL SYSTEM

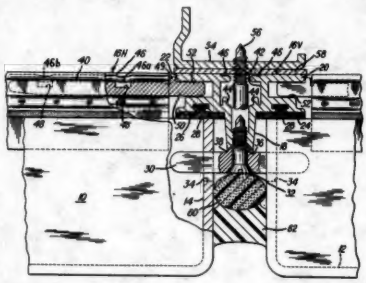
Jack Geortner, Chatham, N.J., assignor to Construction Specialties, Inc., Cranford, N.J.

Filed Jan. 17, 1983, Ser. No. 458,540

Int. Cl.[4] E04B 1/62

U.S. Cl. 52—403 9 Claims

1. An exterior panel wall assembly having a multiplicity of rectangular panels arranged in closely spaced relation side by side and end to end and retainers fastened to the building structure and interposed between the building structure and a pair of edges of a pair of adjacent panels characterized in that each panel is of panlike shape, having a principal wall forming a portion of an exterior building wall and a continuous peripheral flange extending toward the building structure, in that each retainer includes a medial portion received between the flanges of the panels on either side of it and a lateral flange extending out on either side of the medial portion that provides a seating surface for the edge of the flange of the corresponding panel, in that the panel flange includes at least one slot located closely adjacent and outwardly of the medial portion of each adjacent retainer, and in that the slotted flange is fastened to the corresponding retainer by at least one attachment



clip that is rotatably connected to the medial portion of the retainer and that has an arm that is adjustable from a position intermediate adjacent flanges of a pair of panels to a position which extends through the slot in the adjacent panel flange.

4,622,795

SPACE FRAMES

Edwin T. Codd, Brisbane, Australia, assignor to Tulserate Limited, London, England

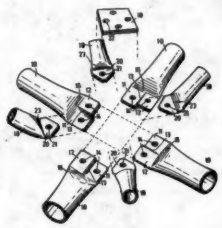
PCT No. PCT/AU84/00158, § 371 Date Apr. 22, 1985, § 102(e) Date Apr. 22, 1985, PCT Pub. No. WO85/01078, PCT Pub. Date Mar. 14, 1985

PCT Filed Aug. 17, 1984, Ser. No. 740,080

Claims priority, application Australia, Aug. 23, 1983, PG0988

Int. Cl.[4] E04H 12/00; E04C 3/02

U.S. Cl. 52—648 12 Claims



1. A space frame including a plurality of frame members interconnected at nodes, comprising:

(a) tubular frame members each of which is flattened at its connecting end, said flattened end being formed with transversely stepped upper and lower parts separated by a shoulder, the top surface of the lower part being substantially in the same plane as the bottom surface of the top part, each of said upper and lower parts being formed with connecting openings extending therethrough,

(b) said frame members being positioned so that the upper part of one frame member overlies the lower part of a laterally adjacent second frame member with the connecting openings aligned, and the lower part of said one frame member underlies the upper part of a laterally adjacent third frame member with the connecting openings being similarly aligned, said third frame member being located generally opposite but not connected to second frame member; lower and upper parts of a further adjacently disposed frame member or members being similarly constructed and aligned, and

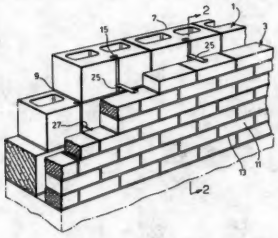
(c) connecting means extending through said connecting openings to secure said frame members at the node.

4,622,796

STRUCTURAL CONNECTION FOR CAVITY WALL CONSTRUCTION

Edward M. Aziz, 203 Base Line Road East, London, Ontario, Canada, and Robert Gulow, 4704 Van Kleeck Dr., New Smyrna Beach, Fla. 32009

Continuation of Ser. No. 335,622, Dec. 30, 1981, abandoned.
This application Jan. 10, 1984, Ser. No. 569,612
Int. Cl.[4] E04C *1/04*
U.S. Cl. 52—747 2 Claims



1. A method of cavity wall construction comprising the steps of:

(a) building a first interior wythe composed of a plurality of masonry blocks arranged in a plurality of courses, at least some of the masonry blocks each having at least one vertical mortise which is in a face of the masonry block and which is open only at said face;

(b) building a second wythe facing the vertical mortises of the first wythe to a level to receive a connector;

(c) placing insulation between the first and second sythes, either prior to or while building the second wythe;

(d) inserting a dovetailed tenon end of a connector through the insulation and into the mortise in one of the masonry blocks and turning the connector to engage said mortise to substantially prevent horizontal movement of the connector;

(e) moving the connector vertically in said mortise to a position horizontally level with the coursing of the second wythe;

(f) cementing a second end of the connector into the mortar joint of the second wythe to prevent vertical movement of the connector and to connect the first and second wythes together.

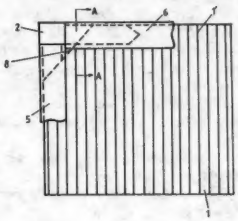
4,622,797

DOUBLE-FACED WEBBED PANEL UNIT, WHICH IS BORDERED AT ITS EDGES BY SECTIONS WHICH ABUT AT AN ANGLE TO EACH OTHER

Heinrich Wüster, Auwerk 18, A-6460 Imst/Tirol, Austria

Filed Sep. 4, 1985, Ser. No. 772,658
Claims priority, application Austria, Sep. 7, 1984, 2873/84
Int. Cl.[4] E04C *2/00, 2/20, 2/38*
U.S. Cl. 52—785 8 Claims

1. A double-faced webbed panel unit, which is bordered at its edges by sections which abut at an angle to each other, characterized in that two abutting sections (5, 6) are connected to each other and to the double-faced webbed panel (1) by a two-legged corner angle member (2), which is disposed in a cutout (8) of the double-faced webbed panel (1) and the legs (3, 4) of which extend in and snugly conform to the ends of the two sections (5, 6) and at least at one end of the section each of those edge portions of the two facings (1") of the double-faced webbed panel (1) which protrude into the interior of the section (6) is disposed between that leg (4) of the corner angle



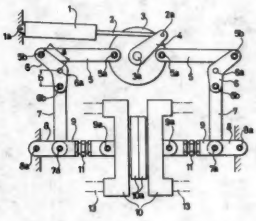
member (2) that has been inserted into the end of the section and the adjacent inside surface of the section.

4,622,798

SEALING MECHANISM FOR A PACKING MACHINE

Yasuo Oki, Tomioka, Japan, assignor to Orihiro Co., Ltd., Japan

Filed Apr. 15, 1985, Ser. No. 723,095
Claims priority, application Japan, Nov. 27, 1984, 59-178697[U]
Int. Cl.[4] B65B *51/30, 51/14*
U.S. Cl. 53—373 4 Claims



1. A sealing mechanism for a packing machine, comprising:

a fixed support;

a cylinder having one end pivotally mounted to said fixed support;

a piston with piston rod extendable and retractable from an opposite end of said cylinder;

a circular disc having a central shaft connected thereto, said central shaft being rotatably mounted to said fixed support for rotation of said circular disc;

a first lever having one end fixed to said central shaft for pivoting of said lever with rotation of said central disc, said first lever having an opposite end pivotally connected to said piston rod;

a pair of second levers each rotatably connected to said disc at diametrically opposite postions adjacent an outer periphery of said disc, each of said pair of second levers having outer ends extending outwardly and on opposite sides of said central shaft;

a pair of third levers each having one end pivotally mounted to one of said outer ends of one of said second levers, each third lever having an opposite end, each third lever comprising a crank lever having an intermediate pivot portion intermediate its opposite ends, said intermediate pivot portion being out of line with said opposite ends of each third lever, each of said third levers being pivotally mounted at their intermediate pivot portion to said fixed support;

a pair of fourth levers each having one end rotatably con-

nected to said opposite end of one of said third levers, each of said fourth levers having an opposite end;

a fifth pair of levers each having a first end pivotally connected to said fixed support at spaced apart locations on said fixed support, each fifth lever having an opposite end;

a pair of fixed levers each having one end pivotally connected to one of said opposite ends of one of said fifth levers at a pivot joint joining said fifth and sixth levers together, each of said sixth levers having an opposite end spaced from said pivot joint;

said opposite end of each of said fourth levers being connected to one of said pivot joints of said fifth and sixth levers;

a pair of sealing substrates slidably mounted on said fixed support toward and away from each other, each sealing substrate being pivotally mounted to one opposite end of one of said sixth levers;

each of said sixth levers having adjustment means intermediate its ends for adjusting a length of each sixth lever; and

a pair of sealing blades each fixed to one of said sealing substrates, said sealing blades facing each other so that, with extension and retraction of said piston rod, said blades are moved toward and away from each other.

4,622,799

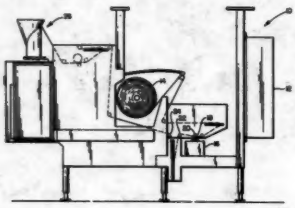
RESEALABLE PACKAGE, METHOD OF MAKING AND USE

Louis R. Boston, Chittenango, N.Y., assignor to Borden, Inc., Columbus, Ohio

Division of Ser. No. 581,060, Feb. 17, 1984. This application Apr. 10, 1985, Ser. No. 721,878

Int. Cl.[4] B65B *1/04*

U.S. Cl. 53—415 **8 Claims**



1. A process for packaging an edible crushable product in a resealable package comprising the steps:

(a) providing a sheet of flexible, moisture-proof heat-sealable material for forming a package,

(b) moving said material along a path from a sheet holding station to a bag filling station,

(c) applying a seal strip to one side of said material at a work station intermediate the holding station and the filling station, said seal strip including a first pressure sensitive adhesive of a first strength disposed between the material and a length of tape, a second pressure sensitive adhesive of a second strength which is of less strength than the first adhesive on the opposite side of the tape from the first adhesive, a peel strip covering the second adhesive,

(d) applying the seal strip to the side of said material which will become the exterior of the package by drawing it from a roll across the direction of movement of the material but spaced from the path of movement,

(e) holding the seal strip in place on a porous plate by application of vacuum, said peel strip facing toward said plate,

(f) moving the strip into contact with the material by moving the plate toward the material and adhesively bonding the strip to the material while preventing any relative lateral movement between the plate and the material,

(g) severing the portion of the strip adhered to the package from the remainder of the roll;

(h) forming the material into a package having a top and with the seal strip parallel thereto, spaced therefrom and with the seal strip on the exterior of the package and on the half of the package nearest the top,

(i) filling the package with a crushable edible product; and

(j) sealing the top to close the package into a fluid impermeable enclosure.

4,622,800

STERILIZING METHOD AND APPARATUS

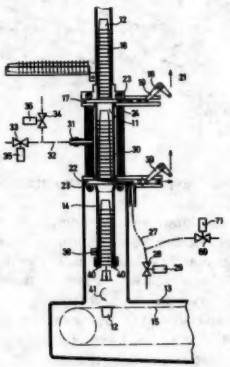
Alfons Turtschan, Schwäbisch Hall, Fed. Rep. of Germany, assignor to Gasti-Verpackungsmaschinen GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 377,636, May 12, 1982, abandoned. This application Jun. 26, 1985, Ser. No. 749,009

Claims priority, application Fed. Rep. of Germany, May 13, 1981, 3119037

Int. Cl.[4] B65B *55/02*

U.S. Cl. 53—425 **14 Claims**



1. A method for sterilizing containers being fed to a filling and sealing machine for the containers, the filling and sealing machine having a sterile processing area, the method comprising the steps of:

providing a batch of the containers, each container in the batch having an open end oriented downwardly and each container being nested in at least one adjacent container, forming a stack, the containers being spaced by spacing structure between outer surfaces of one container and inner surfaces of a next container;

introducing the batch of the containers into a loading station attached to a sterilizing chamber, the sterilizing chamber having a sealable inlet and a sealable outlet including slidable doors, the outlet communicating directly with the filling and sealing machine when unsealed;

opening the inlet and transferring the batch of containers into the sterilizing chamber through the inlet while the outlet is kept sealed by transverse pressure on a door of the sealable outlet, the sterilizing chamber being isolated from the sterile processing area of the filling and sealing machine, the batch of containers remaining in the nested, downwardly-oriented attitude in the sterilizing chamber;

sealing the inlet by eccentric rollers which apply transverse pressure on a door of the sealable inlet and thereby isolating the sterilizing chamber;

sterilizing said batch of containers;

directly and sealably transferring the sterilized batch of containers into the filling and sealing machine by opening the outlet and transferring the batch of containers with the inlet kept closed and sealed by said transverse pressure on the door of the sealable inlet, the batch of containers being supported on a horizontal surface in the sterilization

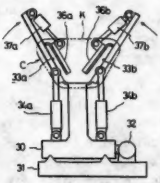
chamber, and the containers remaining in nested, downwardly-oriented attitude, whereby the containers, and the outlet through which the containers pass, remain sterile and the containers remain empty even though nested.

4,622,801

METHOD AND AN APPARATUS FOR SEALING A NOSE OF A PACKAGING FLAT TUBE BAND AFTER OPENING THE NOSE

Seiji Aoki, and Gennai Yanagisawa, both of Tokyo, Japan, assignors to Taiyo Shokai Co., Ltd., Tokyo, Japan

Filed Apr. 27, 1984, Ser. No. 604,840
Claims priority, application Japan, May 2, 1983, 58-76272
Int. Cl.[4] B65B *63/04*
U.S. Cl. 53—429 **4 Claims**



1. A packaging method for soft build-up sheet-like matter, which method comprises:

(a) holding a piled-up sheet-like matter group to be packaged vertically in holding plates;

(b) bending the matter group as held therein by rotating arms of the holding plates towards each other to bend the matter group, said bending step forming a V-shape or an angular shape with the center portion working as an edge line and held in bent position;

(c) feeding the nose portion of a continuous thermowelding flat tube for packaging an outer sack near the bent sheet-like matter group in the direction of an edge line and expanded tubularly as far as said bent sheet-like matter group can be inserted;

(d) inserting said bent sheet-like matter group into said tube together with the holding plates, then rotating said arms to their initial position to unbend the piled-up sheet-like matter group to a horizontal state;

(e) next holding the sheet-like matter group vertically and fixed in place from outside the flat tube;

(f) then removing only the holding plates from inside the flat tube, then holding the flat tube only vertically;

(g) heating longitudinally the piled-up sheet-like matter group to weld only the upper and lower films; and then

(h) cutting a portion of the flat tube ranging to an unaffected side of the flat tube to form packaged sheet-like matter.

4,622,802

METHOD OF PACKING ARTICLES

Yoshiyuki Takamura, Nagoya, Japan, assignor to Fuji Pack System Ltd., Nagoya, Japan

Filed Sep. 17, 1985, Ser. No. 776,733
Int. Cl.[4] B65B *11/22*
U.S. Cl. 53—466 **11 Claims**

1. A method of packing an article, comprising:

placing an article to be wrapped on a reception block, said reception block having front and rear sides;

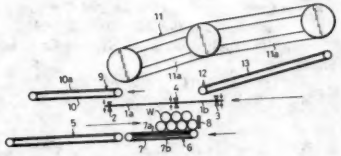
providing a packing film having front, rear and two side portions, said packing film being stretched above the article;

providing a tuck block having a front end, said tuck block being located so that the front end of the tuck block is at least situated above the rear portion of the packing film, and when the reception block is moved upwardly, the front end of the tuck block is situated adjacent to the rear side of the reception block;

providing a discharge block having a rear end, said discharge block being located so that the rear end of the discharge block is situated above at least the front portion of the packing film;

moving upwardly the reception block with the article thereon and at least the rear end of the discharge block so that the rear portion of the packing film extends downwardly between the tuck block and the reception block and the front portion of the packing film is located under the rear end of the discharge block;

moving the reception block and the tuck block toward the



discharge block until the front end of the tuck block is located adjacent to the rear end of the discharge block so that the position of the article relative to the discharge block is not changed, whereby the rear portion of the packing film is located between an upper surface of the tuck block and the article;

moving the reception block and at least the rear end of the discharge block downwardly so that the front portion of the packing film extends downwardly between the front end of the tuck block and the rear end of the discharge block; and

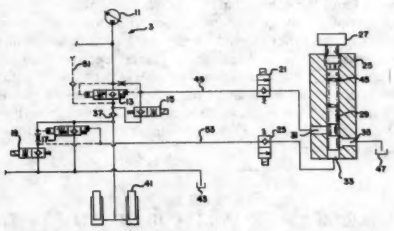
moving the article relative to the tuck block and the discharge block so that the front portion of the packing film is located between the article and the discharge block.

4,622,803

HEADER FLOTATION

Richard J. Lech, Naperville, Ill., assignor to J. I. Case Company, Racine, Wis.

Filed Jun. 28, 1984, Ser. No. 625,399
Int. Cl.[4] A01F *12/00*
U.S. Cl. 56—10.2 **25 Claims**



1. A hydraulic system for raising, lowering and floating an implement from an agricultural vehicle in engagement with the ground comprising:

a pump providing pressurized fluid;

at least one single-acting cylinder supporting said implement and being selectively connected with said pump;

a raise valve having a first position connecting said cylinder with said pump;

a pilot raise valve for activating said raise valve;

a lowering valve having a first position for evacuating the fluid within said cylinder;

a pilot lowering valve for activating said lowering valve; and

hydraulic pressure regulating means connected with said cylinder when the implement is floating and adjustable to transfer a predetermined portion of the weight of the implement to the ground.

4,622,804

MACHINE WHICH IS PULLED OR PROVIDED WITH A THREE-POINT ATTACHMENT TO A TRACTOR AND USED FOR THE HARVESTING OF CORN AND SIMILAR STALK-LIKE CROP

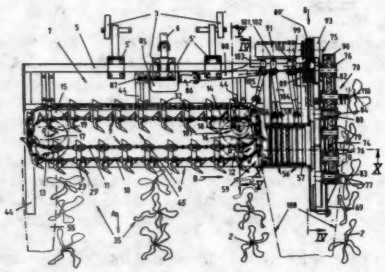
Bernard Krone, Spelle, and Wilhelm Ahler, Stadtlohn, both of Fed. Rep. of Germany, assignors to Maschinenfabriken Bernard Krone GmbH, Spelle, Fed. Rep. of Germany

Filed Jun. 26, 1984, Ser. No. 624,693

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1983, 3324899

Int. Cl.[4] A01D *45/02*; A01F *29/02*

U.S. Cl. 56—13.9 **43 Claims**



1. A machine for the harvesting of corn or similar stalk-like crops comprising a frame means, a cutting and supplying means mounted on said frame means and operable to cut said crop and convey the cut crop generally transversely of the direction of travel of the machine, said cutting and supplying means comprising a knife means extending transversely to the direction of travel of the machine, said cutting and supply means further comprising chain means, said chain means comprising two endless chains and two guide wheels for each endless chain, each of said guide wheels rotating around generally vertical axes with one of said chains being vertically spaced from the other chain, the two guide wheels for one of said chains being horizontally spaced from the two guide wheels of the other of said chains so that the two chains are staggered in different horizontal planes, each of said chains having parallel runs extending transversely of the direction of travel of said machine, and chopping means mounted on said frame means in a position to receive said cut crop after the latter has been conveyed transversely by said cutting and supplying means.

4,622,805

AUGER LIFT MECHANISM FOR CROP HARVESTING HEADER

Orlin W. Johnson, Lockport; Michael P. Larson, Andover; Richard E. Benson, East Moline; Dathan R. Kerber, and Jon R. Cross, both of Bolingbrook, all of Ill., assignors to J. I. Case Company, Racine, Wis.

Filed Jul. 24, 1985, Ser. No. 758,299

Int. Cl.[4] A01D *47/00*

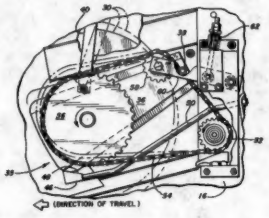
U.S. Cl. 56—14.3 **12 Claims**

1. In a crop harvesting header having a frame and a floor upon which crop material is conveyed:

a crop conveying auger mounted on the header frame in spaced relation above the header floor for conveying crop material between the auger and the floor;

means mounting said auger on the frame for movement toward and away from the header floor to vary the crop conveying space therebetween;

a reel mounted on the header frame for conveying crop material toward said auger;



means mounting said reel for up and down movement relative to the frame; and

means operatively connected between said reel and auger for automatically lifting said auger responsive to moving said reel, whereby the crop conveying space between the auger and header floor is increased to assist in clearing crop material plugged in the crop conveying space.

4,622,806

DITCH SWATHER

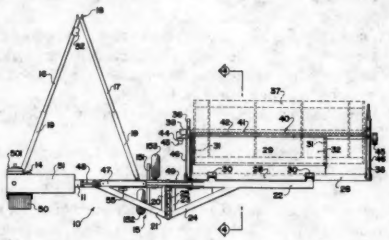
Reuben Bahnman, and Frank J. Dietz, both of Loreburn, Canada, assignors to Autotran Swather Limited, Loreburn, Canada

Filed Feb. 4, 1985, Ser. No. 697,862

Claims priority, application Canada, Feb. 7, 1984, 446942

Int. Cl.[4] A01D *34/04*

U.S. Cl. 56—16.2 **16 Claims**



1. A ditch swather comprising a frame having spaced parallel ground wheels for supporting the frame and hitch means by which the frame can be pulled in a direction transverse to its length to follow behind the hitch means, a swather device including a reciprocating toothed drive blade for cutting a crop, a reel and a draper for guiding the cut crop into a swath for deposit behind the swather device, means mounting the swather device on one end of the frame such that the swather device extends outwardly from said one end for forward motion with said frame, said mounting means allowing pivotal movement of the swather device relative to the end of the frame about a horizonal axis transverse to the frame whereby the swather device can incline downwardly for operating upon a ground surface inclined to the ground surface on which the frame is supported and including means for lifting said swather device from said downwardly inclined position and a gauge wheel on the end of the swather device remote from the frame for controlling the height from the inclined ground surface of

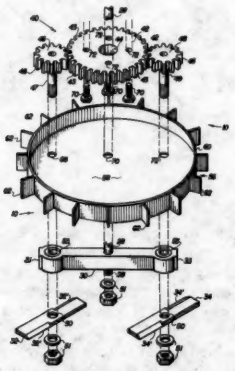
the blade, wherein the ground wheel at said one end of the frame is mounted as one of a pair on a beam, which beam is mounted for pivotal movement relative to the frame about a horizontal pivot axis parallel to the axes of the wheels, the wheels being spaced in a direction transverse to the frame either side of the pivot axis.

4,622,807

PLANETARY BLADE ASSEMBLY FOR A POWER LAWN MOWER

John P. Reymann, 999 W. 66 St., Hialeah, Fla. 33012

Filed May 10, 1985, Ser. No. 732,340
Int. Cl.[4] A01D *34/76*
U.S. Cl. 56—295 4 Claims



1. A cutting assembly of the type primarily designed for use with a power lawn mower, said assembly comprising:

(a) a drive means for rotatably driving said cutting assembly including a drive shaft extending from a supported driven relation with a support platform,

(b) said drive means comprising a drive arm fixedly secured to said drive shaft so as to rotate therewith, said drive arm extending transversely outwardly from said drive shaft in opposite directions for a substantially equal distance and terminating in opposite ends,

(c) blade means comprising at least two blade elements each attached to one of said opposite ends of said drive arm and movable in a common circular cutting path therewith,

(d) a gear assembly interconnected between said driving means and said two blade elements and in rotatably driving relation to said blade elements,

(e) said gear assembly comprising a sun gear fixedly secured to said support platform and disposed in coaxial relation to said drive shaft; a plurality of planet gears equal in number to said blade elements and disposed in spaced relation to one another and in intermeshing engagement with said sun gear about the outer periphery thereof,

(f) a plurality of support shafts equal in number to said blade elements, each support shaft fixedly secured at one common end to one of said planet gears and at an opposite common end to one of said blade elements,

(g) each of said support shafts rotatably connected to said drive arm so as to rotate therewith along said common circular path, each of said support shafts and respective planet gears and blade elements attached thereto and rotatable as a unit about a central longitudinal axis of said respective support shafts,

(h) said mounting shafts and respective blade elements rotatable about said circular cutting path upon rotation of said drive arm and structured to accomplish concurrent rotation of each of said blade elements about said central longitudinal axis of said respective mounting shafts, the latter rotation of said cutting blades provided by movable intermeshing engagement of said planetary gears about the outer periphery of said sun gear, and

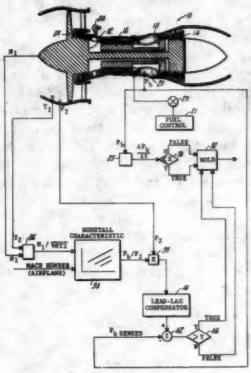
(i) a casing mounted on said drive shaft above said drive arm and substantially enclosing said gear assembly and rotatable therewith, wherein said casing comprises a base and a continuous side wall extending about a periphery of said base in substantially outstanding, transverse relation thereto, deflection means for preventing fouling of said gear assembly by debris from said blade means, said deflection means secured to an outer surface of said continuous side wall and projecting outwardly therefrom, said deflection means further structed to establish a forced air flow about said casing for the deflection of debris.

4,622,808

SURGE/STALL CESSATION DETECTION SYSTEM

David F. Kenison, Glastonbury, and Donald E. Sheppard, South Windsor, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 20, 1984, Ser. No. 683,903
Int. Cl.[4] F02C *9/00, 9/18*
U.S. Cl. 60—39.29 3 Claims



1. For an aircraft twin spool turbine power plant having low pressure compressor, a high pressure compressor and burner, means for electronically ascertaining the cessation of stall-/surge in the compressor including:

means responsive to corrected low pressure compressor speed and Mach number of the aircraft to generate a first signal indicative of a schedule of a family of curves that are indicative of the nonstall characteristic of the power plant,

means responsive to the rate of change with respect to time of actual burner pressure for generating a second signal indicative of a stall/surge condition,

means responsive to actual burner pressure to produce a third signal,

a summer responding to said first signal and said third signal to produce a fourth signal indicative of a stall condition,

and a holding circuit permitting said second signal to produce an output solely when said second signal and said fourth signal are indicative of a stall condition.

4,622,809

METHOD AND APPARATUS FOR MONITORING AND ADJUSTING λ-PROBE-CONTROLLED CATALYTIC EXHAUST GAS EMISSION CONTROL SYSTEMS OF INTERNAL COMBUSTION ENGINES

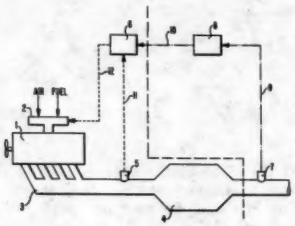
Jörg Abthoff, Pluederhausen; Hans-Dieter Schuster, Schorndorf; Gottfried Wollenhaupt, Stuttgart; Gunter Loose, Remseck, and Michael-Rainer Busch, Ebersbach, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 8, 1985, Ser. No. 720,686

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1984, 3413760

Int. Cl.[4] F01N *3/20*

U.S. Cl. 60—274 10 Claims



1. A method for monitoring and adjusting catalytic exhaust gas emission control systems of internal combustion engines, comprising the steps of measuring the fuel-air-ratio in the exhaust gas by means of a control-probe, increasing respectively decreasing the fuel supply on the suction side when exceeding respectively dropping below a predetermined desired voltage of the control-probe, further converting the exhaust gas in a catalyst located in the exhaust gas stream downstream of the control-probe, measuring the fuel-air-ratio of the exhaust gas downstream of the catalyst as viewed in the flow direction by a further probe, determining the amplitude and average value of the output signal of said further probe and in case of a deviation of the average value from a predetermined desired value, changing the operating point of the control system for such length of time until the further probe has reached its desired value, and producing a signal indicating the need to exchange the catalyst when the output signal of the further probe exceeds a predetermined amplitude magnitude.

4,622,810

DEVICE FOR REMOVING PARTICULATES IN EXHAUST GAS

Kiyoichi Shinsei, Ono, and Hiroaki Takada, Himeji, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 548,873, Nov. 4, 1983, abandoned. This application Dec. 20, 1985, Ser. No. 810,906

Claims priority, application Japan, Nov. 16, 1982, 57-174359[U]

Int. Cl.[4] F01N *3/02*

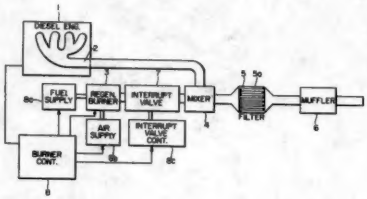
U.S. Cl. 60—286 6 Claims

1. A device for removing particulates from a flow of exhaust has exhausted from a diesel engine before the flow of exhaust gas is exhausted to the outside atmosphere, comprising:

a particulate filter having a filter inlet;

a regenerative burner for producing combustion gas, having a burner outlet, said regenerating burner including a housing having a first closed end and a second open end and defining a combustion chamber therein, an injection nozzle disposed at said closed end to inject a fuel and air mixture into said combustion chamber, and an ignition plug disposed at said closed end to be adjacent to said injection nozzle;

means, including only one exhaust gas conduit connected to said filter inlet for directing the flow of exhaust gas thereto, for concurrently directing the flow of exhaust gas, and all of the combustion gas produced by said regenerating burner from said burner outlet into said filter through said exhaust gas conduit and said filter inlet, such that the combustion gas burns and removes particulates caught in said filter while said filter removes particulates from the flow of exhaust gas, and such that all of the flow of exhaust gas, and all of the combustion gas from said regenerating burner are directed through said filter before being exhausted to the outside atmosphere, said burner outlet being fluidly cummunicable with said filter only through said exhaust gas conduit;



means for controlling said regenerating burner, including means for turning said regenerating burner on and off;

an interrupting valve between said regenerating burner and said exhaust gas conduit, shiftable between an open position in which said regenerating burner and said exhaust gas conduit are in fluid communication and a closed position in which said interruption valve blocks fluid communication between said regenerating burner and said exhaust gas conduit and

means for shifting said interrupting valve into said closed position when said regenerating burner is off, so as to prevent exhaust gas from passing through said interrupting valve into said regenerating burner.

4,622,811

BURNER AND METHOD FOR REMOVAL OF ACCUMULATED SOOT ON A SOOT FILTER IN INTERNAL COMBUSTION ENGINES

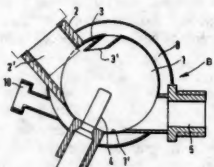
Robert Distel; Hans Gröner, both of Munich, and Peter Kugland, Schweitenkirchen, all of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke AG, Fed. Rep. of Germany

Continuation of Ser. No. 498,691, May 27, 1983, abandoned. This application Jun. 24, 1985, Ser. No. 725,658

Claims priority, application Fed. Rep. of Germany, May 27, 1982, 3219948

Int. Cl.[4] F01N *3/10*

U.S. Cl. 60—303 10 Claims



1. A system for burning off accumulated soot on soot filters associated with internal combustion engines comprising an internal combustion engine having an exhaust system, a soot

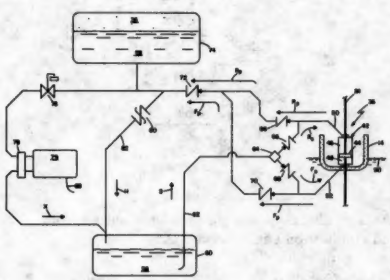
filter disposed in the exhaust system downstream from the engine, and a burner connected to the exhaust system between the engine and the soot filter, the burner including a burner chamber, an annular chamber disposed around said burner chamber, means for injecting fuel into the burner chamber including a fuel nozzle, plug means for one of inducing heat to and causing ignition of a fuel-air mixture in the burner chamber, and means for conducting air having traversed through the annular chamber into the burner chamber, said means for conducting air including a tangentially disposed outlet orifice for introducing the entire amount of air employed in the burner chamber and located in the periphery of the burner chamber for inducing a generally swirling flow to the air being introduced into said burner chamber, the air orifice, the means for injecting fuel, the plug means being flow arranged one behind the other in the burner chamber in the flow direction of the air through the burner chamber, said annular chamber being disposed around the burner chamber in a manner such that air passing therethrough cools the burner chamber and is preheated prior to being conducted into the burner chamber through the outlet orifice.

4,622,812

APPARATUS FOR DERIVING ENERGY FROM VARIATION OF THE LEVEL OF A BODY OF FLUID

Randall Thompson, Jr., Three Craige St., Cambridge, Mass. 02138, and Ernesto Blanco, 36 Sandrick Rd., Belmont, Mass. 02178

Filed Apr. 23, 1985, Ser. No. 726,127
Int. Cl.[4] F16D *31/02*
U.S. Cl. 60—398 **4 Claims**



1. An apparatus for deriving energy from periodic rise and fall of the level of a body of liquid, comprising

float means disposed upon said body of liquid and adapted to move substantially ina vertical plane in response to said periodic rise and fall of said body of liquid,

a cylinder having a piston therewithin, said piston adapted for vertical movement relative to said cylinder in response to rise and fall of said float with said body of liquid, in a manner to apply force to fluid in a chamber of said cylinder, said force being applied alternately to opposed chambers of said cylinder, said piston being fixed and said cylinder being mounted to rise and fall relative to said piston in response to said periodic rise and fall of the level of said body of liquid, and,

disposed at a location removed from said body of liquid, means for converting force applied to said fluid to energy, and

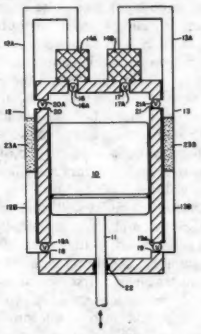
an accumulator connected for receiving fluid from said chamber for storing energy in the form of gas pressurized within said accumulator by force applied to said fluid and connected to said means for converting force applied to said fluid to energy.

4,622,813

STIRLING CYCLE ENGINE AND HEAT PUMP

Matthew P. Mitchell, 151 Alvarado Rd., Berkeley, Calif. 94705

PCT No. PCT/US84/01731, § 371 Date Oct. 29, 1984, § 102(e) Date Oct. 29, 1984, PCT Pub. No. WO85/01988, PCT Pub. Date May 9, 1985
Continuation-in-part of Ser. No. 548,198, Nov. 2, 1983, abandoned. This PCT application Oct. 29, 1984, Ser. No. 668,717
Int. Cl.[4] F02G *1/04*
U.S. Cl. 60—522 **24 Claims**



1. A method of operating a hot gas engine comprising a cylinder having one end thereof connected to the other end thereof through at least two separate closed heat exchanger assemblies, each comprising heated heat exchanger means and cooled heat exchanger means serially arranged, the hot end of each such closed heat exchanger assembly being attached to the same end of the cylinder; each said closed heat exchanger assembly equipped with valve means at each end thereof; said cylinder accommodating a double-acting reciprocating piston means; said piston means cyclically displacing and being displaced by a volume of gas for each such closed heat exchanger assembly; said volumes of gas being alternately confined in and released from said closed heat exchanger assemblies by said valves, comprising steps of:

(a) with said piston essentially at the end of its travel toward the end of said cylinder communicating through valve means to the heated heat exchanger means, with both valve means in the first heat exchanger assembly in open position and both valve means in the second heat exchanger assembly in closed position and with a first volume of gas disposed within said first heat exchanger assembly and within said cylinder, and with a second volume of gas compressed in said second heat exchanger assembly and with each other heat exchanger assembly containing a volume of gas compressed within it, closing said valve means at the hot end of said first heat exchanger assembly and essentially simultaneously opening said valve means at the hot end of said second heat exchanger assembly, expanding said second volume of gas into said cylinder against the first side of said piston while simultaneously compressing and expelling from said cylinder on the second side of said piston said first volume of gas through valve means at the cold end of said first heat exchanger assembly into said first heat exchanger assembly;

(b) with said piston essentially at the end of its travel toward the end of said cylinder communicating through said valve means to the cold ends of said heat exchanger assemblies, closing said valve means at the cold end of said first heat exchanger assembly and essentially simultaneously opening said valve means at the cold end of said second heat exchanger assembly, expelling said second volume of gas from said cylinder on said first side of said

piston through said second heat exchanger assembly into said cylinder on said second side of said piston while simultaneously retaining said first volume of gas compressed in said second heat exchanger assembly;

(c) with said piston essentially at the end of its travel toward the end of said cylinder communicating with said valve means to the hot end of said heat exchanger assembly, closing said valve means at the hot end of said second heat exchanger assembly and essentially simultaneously opening said valve means at said hot end of another heat exchanger assembly, which, in the case of an engine equipped with only two heat exchanger assemblies will be said first heat exchanger assembly, expanding said other volume of gas into said cylinder through said valve at the hot end of said other heat exchanger assembly against the first side of said piston while simultaneously compressing and expelling from said cylinder on the second side of said piston said second volume of gas through said valve means at the cold end of said second heat exchanger assembly into said second heat exchanger assembly;

(d) with said piston essentially at the end of its travel toward the end of said cylinder communicating with said valve means to the cold end of said heat exchanger assembly, closing said valve means at said cold end of said second heat exchanger assembly and essentially simultaneously opening said valve means at the cold end of said other heat exchanger assembly, expelling said other volume of gas from said cylinder on said first side of said piston through said other heat exchanger assembly into said cylinder on said second side of said piston while simultaneously retaining said second volume of gas compressed in said second heat exchanger assembly;

(e) repeating the cycle described in steps c. and d., treating the heat exchanger assembly from which gas has most recently been expelled into the cylinder as the second heat exchanger assembly and the next heat exchanger assembly in sequence as the other heat exchanger in a continuous repetition.

4,622,814

HYDRAULIC ASSISTANCE DEVICE

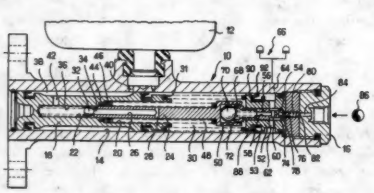
Gilbert Kervagoret, Argenteuil, France, assignor to Societe Anonyme D.B.A., Paris, France

Filed Feb. 15, 1985, Ser. No. 701,901

Claims priority, application France, Feb. 29, 1984, 84 03105; Mar. 28, 1984, 84 04843

Int. Cl.[4] B60T *13/20*

U.S. Cl. 60—555 **5 Claims**



1. A hydraulic assistance device incorporating a body provided with a bore in which a first piston is slideably mounted and movable by actuation of a brake pedal, between a first position allowing communication of a first chamber joined to a braking circuit and a low pressure reservoir, and isolating the first chamber from a high pressure source, and a second position isolating the first chamber from the low pressure reservoir and placing the first chamber into communication with the high pressure source, the device including a second chamber formed in the body and a first passage communicating the second chamber with the brakes, characterized in that the device comprises first valve means in the first passage so that the first passage is normally closed, the first valve means being sensitive to pressure in the second chamber so that when pressure in the second chamber exceeds pressure existing in the first chamber the first valve means opens to allow fluid to flow between the second chamber and brakes, the first chamber formed in the bore between the body and a sleeve, the communication between the first chamber and reservoir including a second bore in the sleeve, a second piston slidably mounted in the second bore and connected with the first piston, second valve means between the high pressure source and first chamber and capable of being controlled by the second piston, an annular space in the bore between the sleeve and the body, the first valve means including a lipped annular seal mounted on the sleeve, a push rod slidably mounted in a bore in the first piston and joining the first piston to the second piston, the communication between the first chamber and reservoir including a bore in the second piston, a second passage in the push rod and an opening in the first piston, and third valve means controlling the communication between the first chamber and reservoir.

4,622,815

PRESSURE REGULATOR

Günter Piesche, Ubstadt-Weiher, Fed. Rep. of Germany, assignor to Ranco Incorporated, Dublin, Ohio

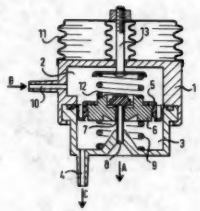
PCT No. PCT/EP82/00233, § 371 Date Apr. 4, 1983, § 102(e) Date Apr. 4, 1983

PCT Filed Oct. 21, 1982, Ser. No. 485,577

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1981, 8130788[U]

Int. Cl.[4] F02D *23/00*

U.S. Cl. 60—602 **8 Claims**



1. An altitude compensating turbocharger controller for an internal combustion engine, comprising:

(a) a controller housing;

(b) an aneroid bellows mounted to said housing;

(c) a control valve assembly having a pressure input for receiving a positive pressure signal indicative of an output pressure of a turbocharger, an atmospheric pressure port connected to ambient air pressure, a control pressure output port, and valving structure defining a differential pressure responsive means including a diaphragm and associated sealing disc movable from a balanced position to alter communication between said control pressure port and one of said input and atmospheric pressure ports to change the control pressure, said differential pressure responsive means acted upon by differential pressure forces whose magnitude varies depending on sensed changes in ambient atmospheric pressure and the signal pressure;

(d) a force transmitting member for transmitting force between said aneroid bellows and said differential pressure responsive means;

(e) said force transmitting member effective to transmit biasing forces generated by said bellows to said differential pressure responsive means in response to sensed atmospheric pressure, said control pressure changing to produce a feedback pressure force on said differential pressure responsive means to oppose said bellows generated biasing force such that said diaphragm and sealing disc are

maintained at said balanced position to produce a static control pressure that is a function of sensed atmospheric pressure and the output pressure of said turbocharger.

4,622,816

INTERNAL COMBUSTION ENGINE SUPERCHARGED BY TURBOCOMPRESSOR

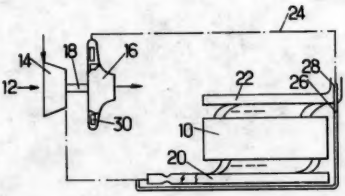
Serge Boudigues, Sceaux, France, assignor to Office National d'Etudes et de Recherches Aerospatiales (par abreviation O.N.E.R.A.), France

Filed Feb. 2, 1984, Ser. No. 576,317

Claims priority, application France, Feb. 3, 1983, 83 01705

Int. Cl.[4] F02B *37/00*

U.S. Cl. 60—606 **5 Claims**



1. A supercharged internal combusion engine having an intake manifold and an exhaust manifold, comprising:

a turbocompressor unit with at least one compressor having an outlet connected to said intake manifold and with at least one turbine, said turbine having an inlet connected to receive exhaust gas from said exhaust manifold, distributor blades and a rotor having vanes,

by-pass pipe means for direct passage of part of the airflow delivered by said compressor to said exhaust gas upstream of said turbine,

and means for angularly adjusting said distributor blades of said turbine, said adjusting means having motor means for movements of said blades and control means for controlling said motor means responsive to input signals representative of the speed of the engine and the temperature of the exhaust gas immediately upstream of said turbine, said control means being constructed and arranged for setting said blades in an angular position such that the relative speed of the exhaust gas with respect to said rotor is substantially parallel to the inlet chord of the vanes of said rotor.

4,622,817

HYDRAULIC ASSIST TURBOCHARGER SYSTEM AND METHOD OF OPERATION

Robert J. Kobayashi, Rancho Palos Verdes, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Sep. 14, 1984, Ser. No. 650,911

Int. Cl.[4] F02B *37/00*

U.S. Cl. 60—608 **103 Claims**

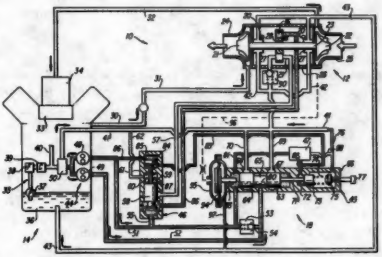
1. An hydraulic assist turbocharger system for supplying charge air to a combustion engine, comprising:

an hydraulic assist turbocharger having a first turbine driven by engine exhaust gases, a compressor rotatably driven by said first turbine for supplying charge air to the engine, and an hydraulic turbine for selective supplemental driving of said compressor;

hydraulic fluid supply means for selectively supplying an hydraulic fluid under pressure into rotatable driving communicating with said hydraulic turbine, said fluid supply means including at least two nozzles for passage of the fluid under pressure into driving communication with said hydraulic turbine;

means for selectively preventing passage of the fluid under pressure through at least one of said nozzles and for permitting passage of the fluid under pressure through at least one other of said nozzles during an engine starting procedure to decrease the available nozzle flow area open to fluid passage and thereby increase the pressure of hydraulic fluid during the engine starting procedure to correspondingly increase supplemental driving of said compressor resulting in increased supply of charge air to the engine; and

means for selectively decreasing the viscosity of the hydraulic fluid during a starting procedure of increase the flow rate of the hydraulic fluid into driving communication with said hydraulic turbine during the starting procedure to correspondingly increase supplemental driving of said compressor resulting in increased supply of charge air to the engine.



8. The hydraulic assist turbocharger system of claim 1, wherein said hydraulic fluid supply means comprises pump means for providing the hydraulic fluid under pressure for flow through said nozzles into driving communication with said hydraulic turbine, and control means including means for responding to engine speed and means for responding to engine load for coupling the hydraulic fluid under pressure to the hydraulic turbine during one condition of engine operation for maximum supplemental driving of said compressor, and for progressively uncoupling the hydraulic fluid under pressure from the hydraulic turbine in response to changes in at least one of engine speed and load for reduced supplemental driving of said compressor.

4,622,818

BEARING SYSTEM FOR A GAS TURBINE

David Flaxington, 1 Crabtree Close, Great Bookham, Leatherhead, Surrey, England (KT23 4PQ); James Kay, 1 Netherley Drive, Marsden, West Yorkshire, England (HD7 6HL), and Steven M. Miller, 12 Harrington Court, Meltham, Huddersfield, West Yorkshire, England (HD7 3ED)

Filed Apr. 22, 1985, Ser. No. 725,665

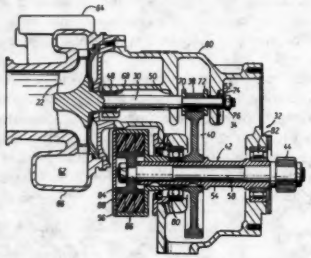
Claims priority, application United Kingdom, Apr. 24, 1984, 84 10450

Int. Cl.[4] F02B *37/00*; F02G *3/00*

U.S. Cl. 60—624 **10 Claims**

1. A gas turbine comprising a shaft, a turbine wheel overhung mounted at one end of the shaft, a gear wheel adjacent the other end of the shaft and bearings journalling the shaft, said bearings consisting of one bearing adjacent said turbine

and two further bearings adjacent said gear wheel and at opposite sides thereof, said bearing adjacent the turbine wheel



comprising a floating bearing and at least one of said further bearings adjacent the gear wheel comprising a fixed bearing.

4,622,819

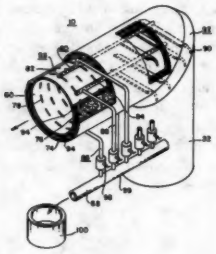
STEAM TURBINE EXHAUST PIPE EROSION PREVENTION SYSTEM

Robert Draper, Churchill Boro, Pa.; George J. Silvestri, Jr., Winter Park, and Homer G. Hargrove, Maitland, both of Fla., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 29, 1985, Ser. No. 696,221

Int. Cl.[4] F01K *19/00*

U.S. Cl. 60—657 **21 Claims**



1. An erosion-prevention device for a fluid-carrying pipe means, said fluid comprising a discontinuous liquid phase portion, said device comprising:

a. liner means of predetermined length and disposed concentrically within said pipe means with a predetermined clearance between said liner means and said pipe means, said clearance between said liner means and said pipe means defining an annular space, said liner means having opening means therethrough for diverting a liquid layer formed from said discontinuous liquid phase portion to said annular space said liner means affixed at the ends thereof to said pipe means;

b. liner wick means positioned within and substantially filling said annular space;

c. collection means disposed within said annular space positioned substantially parallel with the axis of said pipe means for collecting a substantial portion of said diverted liquid layer;

d. liner drain means for draining said collected diverted liquid layer comprising drain pipe means in fluid communication with said collection means, whereby said liquid layer which is formed by said erosion causing liquid phase droplets is diverted from said pipe means thereby diminishing the erosion of said pipe means.

4,622,820

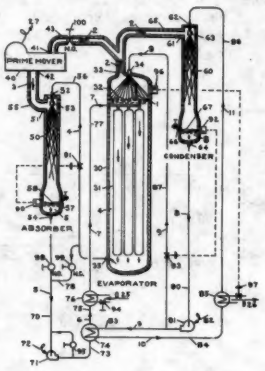
ABSORPTION POWER GENERATOR

Charles T. Sundquist, 1971 Sheridan Pl., Richland, Wash. 99352

Filed Sep. 27, 1985, Ser. No. 781,246

Int. Cl.[4] F01K *25/06*

U.S. Cl. 60—673 **26 Claims**



1. An absorption power generator including the following: an evaporator including an evaporator vessel, a vertical tube inside said evaporator vessel, weak solution in the shell space of said evaporator vessel, a liquid-vapor interface in said evaporator vessel, a vapor outlet from said evaporator vessel, a reflux contactor means, a weak solution outlet from said evaporator vessel, heating liquid entering the top of said vertical tube, heating liquid flowing downward and exiting from the bottom of said evaporator tube, heating liquid mixing into said weak solution, weak solution exiting through said weak solution outlet, evaporator vapor separating from said liquid-vapor interface, pumped condensate being introduced into evaporator vapor by said reflux contactor means, pumped condensate being evaporated by evaporator vapor and the resulting mixture becoming rectified vapor, rectified vapor exiting from said evaporator vessel through said vapor outlet; a prime mover including a high pressure inlet, a low pressure outlet, rectified vapor entering said high pressure inlet, power being extracted from rectified vapor in said prime mover, exhaust vapor exiting through said low pressure outlet; a power vapor conduit connecting a vapor outlet in said evaporator vessel to said high pressure inlet, rectified vapor flowing from said evaporator vessel through said power vapor conduit to said prime mover; an absorber including an absorber vessel, an exhaust vapor inlet, a weak solution inlet, a solution contactor means, a strong solution outlet, exhaust vapor entering said exhaust vapor inlet, weak solution entering said weak solution inlet, weak solution being introduced into exhaust vapor by said solution contactor means, weak solution absorbing exhaust vapor and becoming strong solution, strong solution exiting through said strong solution outlet; an exhaust vapor conduit connecting said low pressure outlet to said exhaust vapor inlet, exhaust vapor flowing from said prime mover through said exhaust vapor conduit to said absorber vessel; a weak solution conduit connecting said weak solution outlet to said weak solution inlet, weak solution flowing from said evaporator vessel through said weak solution conduit to said absorber vessel; a condenser including a condenser vessel, a rectified vapor inlet, a cool condensate inlet, a condensate contactor means, a hot condensate outlet, rectified vapor entering said rectified vapor inlet, cool condensate entering said cool condensate inlet, cool condensate being introduced into rectified vapor by said condensate contactor means, cool condensate condensing rectified vapor in said condenser vessel, hot condensate collecting inside said condenser vessel, hot condensate exiting through said

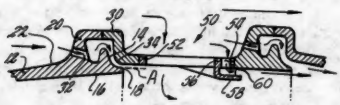
hot condensate outlet; a rectifier conduit connecting a vapor outlet in said evaporator vessel to said rectified vapor inlet, rectified vapor flowing from said evaporator vessel through said rectifier conduit to said condenser vessel; a solution pumping system including a solution suction conduit connecting said strong solution outlet to the inlet of a solution pump, a solution discharge conduit connecting the outlet of said solution pump to the solution inlet of a heat exchanger, a warm solution conduit connecting the solution outlet of said heat exchanger to the solution inlet of a solution heater, a heating conduit connecting the solution outlet of said solution heater to the top of said vertical tube, stronge solution flowing from said absorber vessel through said solution suction conduit through said solution pump through said solution discharge conduit into said heat exchanger, warm solution flowing from said heat exchanger through said warm solution conduit into said solution heater, heating liquid flowing from said solution heater through said heating conduit to the top of said vertical tube; input heat entering said solution heater; a condensate circulating system including a condensate suction conduit connecting said hot condensate outlet to the inlet of a condensate pump, a pumped condensate conduit connecting the outlet of said condensate pump to the condensate inlet of said heat exchanger, a warm condensate conduit connecting the condensate outlet of said heat exchanger to the condensate inlet of a condensate cooler, a cool condensate conduit connecting the condensate outlet of said condensate cooler to said cool condensate inlet, hot condensate flowing from said condenser vessel through said condensate suction conduit into said condensate pump, pumped condensate flowing from said condensate pump through said pumped condensate conduit into said heat exchanger, warm condensate flowing from said heat exchanger through said warm condensate conduit into said condensate cooler, cool condensate flowing from said condensate cooler through said cool condensate conduit to said condenser vessel; rejected heat being removed from said condensate cooler; a reflux conduit connecting the outlet of said condensate pump to said reflux contactor means, pumped condensate flowing from said condensate pump through said reflux conduit to said reflux contactor means.

4,622,821

COMBUSTION LINER FOR A GAS TURBINE ENGINE

Thomas J. Madden, Vernon, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jan. 7, 1985, Ser. No. 689,253
Int. Cl.[4] F02C *1/00*; F02G *3/00*
U.S. Cl. 60—757 **6 Claims**



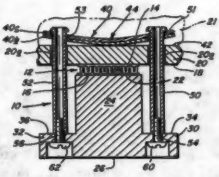
1. For a gas turbine power plant, a combustor having a plurality of panels generally circular in shape and extending axially arranged end to end to define an annular combustion chamber, each of said panels having an inner surface subjected to combustion gases and an outer surface subjected to power plant cooler air, means on the downstream end to develop a film of a cool air flowing from said outer surface into said combustion chamber adjacent said inner surface, a plurality of openings in said panels for directing from said outer surface said cooler air to be used as combustion/dilution air radially into said combustion chamber passing through a portion of said film of cool air and obstructing the path of said portion, means for redefining the cooling film downstream of said openings relative to the flow of said combustion gases, a grommet supported to one of said panels having a generally circular body extending through each of said openings, a lip extending from the end of said grommet partially circumscribing said circular body on its downstream side relative to the flow of said combustion gases, said lip extending axially in said downstream direction and spaced from said inner surface, means for directly impinging said cool air from said outer surface onto said lip so that the impinged air is directed to flow adjacent said inner surface in said downstream direction, said lip having opposing said edges support means extending from said side edges to said circular body and defining with said lip an open ended channel, said channel being oriented with respect to said panels to orient the flow discharging from said lip in a given downstream direction.

4,622,822

PELTIER THERMOELECTRIC ELEMENT MOUNTING

Shlomo Beitner, 3900 N. Lakeshore Dr., Ste. 14A, Chicago, Ill. 60613

Filed May 7, 1984, Ser. No. 607,747
Int. Cl.[4] F25B *21/02*; B25B *1/00*
U.S. Cl. 62—3 **11 Claims**



1. In an enclosed multi-edged box whose interior is to be selectively cooled or heated by use of thermoelectric modules of the Peltier type; the provision of at least one short cornering wall section, which joins two principal walls of the box, and a heat transfer unit mounted on the cornering wall section in heat conducting relationship therewith, the heat transfer unit including a first heat conducting member secured to the outside of the cornering wall section, a heat exchange member operatively associated with the first heat conducting member and spaced therefrom; a Peltier type thermoelectric module interposed between said first heat conducting member and the heat exchange member; a pair of elongated clamping means associated with the first heat conducting member and heat exchange member for clamping same against opposite substrates of the thermoelectric module; elongated bowed spring means operatively associated with the pair of clamping means for clamping the heat exchange member in heat conductive relation against one substrate of the module, with the center of the spring means resiliently biasing the heat exchange member against the substrate of the module that engages the heat exchange member; and fin means on the heat exchange member for exchanging heat therefrom with ambient air.

4,622,823

GAS REFRIGERATOR

Tadao Ishizawa; Hirofumi Kotaka, and Masami Kakinuma, all of Narashino, Japan, assignors to Seiko Seiki Kabushiki Kaisha, Chiba, Japan

Filed Dec. 20, 1984, Ser. No. 684,244
Claims priority, application Japan, Dec. 26, 1983, 58-247917
Int. Cl.[4] F25B *9/00*
U.S. Cl. 62—6 **14 Claims**

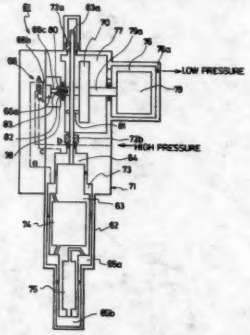
1. A gas refrigerator comprising:

a cylinder having slidably mounted therein a piston which divides the cylinder into first and second variable volume chambers disposed on opposite sides of the piston;

passageway means for alternately supplying high and/or low pressure working gas to said first and second variable volume chambers so as to effect reciprocation of the piston in the cylinder in response to the difference in

pressure of the working gas in said first and second chambers;

valve means operative when driven to switch a passageway for the working gas provided between said first and second variable volume chambers alternately to a high-pressure supply side and a low-pressure return side to thereby alternately supply high and low pressure working gas to said first and second chambers;



a movable cam operative when driven to guide the reciprocation of said piston in synchronization with the motion of said valve means to control the stroke and/or speed of the piston so as to reduce the speed of the piston in the regions adjacent its top and bottom dead centers; and

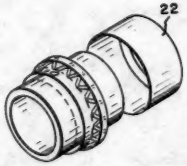
driving means for driving the cam and the valve means in synchronism.

4,622,824

CRYOSTAT SUSPENSION SYSTEM

Richard L. Creedon, San Diego, Calif., assignor to GA Technologies Inc., San Diego, Calif.

Filed Sep. 3, 1985, Ser. No. 772,040
Int. Cl.[4] F17C *7/02*
U.S. Cl. 62—55 **20 Claims**



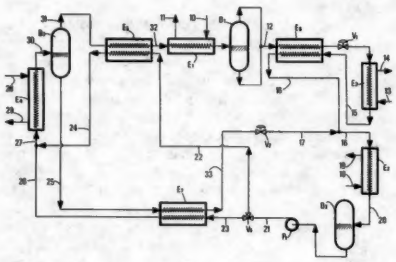
1. A low heat transfer suspension system for use in supporting from an outer circularly cylindrical vessel an inner circularly cylindrical vessel enclosed by and essentially concentric with said outer vessel comprising a truss having two ends which is attached at an end to a plurality of positions about an outer circumference of the inner vessel at approximately the center of mass of the inner vessel, said outer circumference defining a midplane of said inner vessel, and which is attached at the other end at a plurality of positions about an inner circumference of the outer vessel such inner circumference being substantially in a plane which is substantially parallel to but axially offset from said midplane of said inner vessel such truss being comprised of a material of low thermal conductivity.

4,622,825

ABSORPTION METHOD FOR THE GENERATION OF COLD AND/OR HEAT USING A MIXTURE OF SEVERAL CONSTITUENTS AS WORKING FLUID

Joseph Larue, Vaucresson, and Alexandre Rojey, Garches, both of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Apr. 25, 1985, Ser. No. 727,169
Claims priority, application France, Apr. 25, 1984, 84 06627
Int. Cl.[4] F25B *15/00*
U.S. Cl. 62—102 **12 Claims**



1. In an absorption method for the generation of cold and/or heat comprising using (i) a working fluid (F) consisting essentially of at least two constituents and (ii) a solvent (S), said solvent having a boiling point at atmospheric pressure of at least 100° C. above the bubble point of said working fluid at atmospheric pressure partially desorbing a solution (M) and at least partially condensing resulting desorbent gases at a relatively high pressure, expanding and vaporizing at least a part of the resultant condensed desorbent gases in a step (c) at a reltively low pressure, thereby generating cold and forming a vaporized mixture; and passing the resultant vaporized mixture to a step (d) into contact with said solvent (S) consisting essentially of the liquid phase resulting from the desorbing step, and absorbing the vaporized mixture in said solvent phase (S) at a pressure proximate to that of step (c), supplying absorption heat to an external fluid, and exchanging heat between solvent phase (S), passed from desorption to absorption and solution (M) passed from absorption to desorption,

the improvement wherein at least two constituents of said working fluid are miscible in said solvent and said solution (M) is a solution of said at least two constituents in said solvent (S), and wherein said condensing of resulting desorbent gases is effected in at least two successive steps the first of which comprises exchanging heat with at least a portion of said solution M passed from absorption to desorption and the second of which comprises exchanging heat with an external heat-receiving medium, whereby heat is delivered to said solution M in greater amount as when using a single constituent working fluid.

4,622,826

CONTROL CIRCUIT FOR AN AUGER TYPE ICE MAKER

Yasumitsu Tsukiyama, Toyoake; Yoshikazu Kito, Oobu; Junichi Hida, Chiryu, and Susumu Tatematsu, Nagoya, all of Japan, assignors to Hoshizaki Electric Co., Ltd., Aichi, Japan

Filed Jul. 26, 1985, Ser. No. 759,438
Int. Cl.[4] F25C *1/00*
U.S. Cl. 62—137 **10 Claims**

1. A control circuit for an auger type ice maker driven by an auger motor and a compressor motor, comprising:

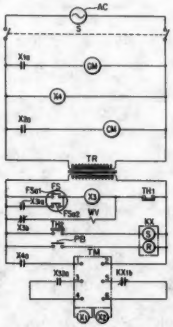
a first means for detecting a predetermined level of ice making water in a water tank;

a second means for detecting a predetermined level of ice in an ice storage hopper;

a relay means which is excited and self-held in response to the detection of said predetermined level of the water by

said first means to stop the supply of the water and which is deenergized in response to the detection of said predetermined level of ice by said second means; and,

a timer circuit means for developing at the beginning of the ice making cycle a signal for driving said auger motor immediately after the excitation of said relay means and



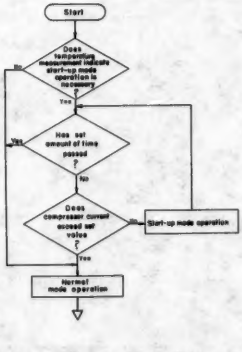
then after a first predetermined time interval a signal for driving said compressor motor and, during the stopping operation, developing a signal for stopping said compressor motor after a second fixed time interval and after the deenergization of said relay means and a signal for stopping said auger motor after a further third fixed time interval and after said compressor motor has stopped.

4,622,827

CONTROL APPARATUS FOR AN AIR CONDITIONER

Ryozo Jabami, Kusatsu; Akira Hamaguchi, Kouka; Shigeru Matsuda, and Yasuyuki Ejima, both of Kusatsu, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Dec. 21, 1984, Ser. No. 684,722
Claims priority, application Japan, Dec. 28, 1983, 58-250888
Int. Cl.[4] G05D *23/32*
U.S. Cl. 62—158 **13 Claims**



1. A control apparatus for an air conditioner comprising:

temperature measuring means for measuring room temperature,

command means for generating a command signal for a normal mode of operation when said room temperature at the start of a warming operation is higher than a set value of temperature, and generating a command signal for a start-up mode of operation when said room temperature at the start of said warming operation is lower than said set value of temperature,

first memory means for storing rotation data corresponding to rotational speed of a compressor in a normal mode of operation, said data having a limit of a first maximum corresponding to maximum rotation speed of said compressor in normal operation,

second memory means for storing rotation data corresponding to rotational speed of said compressor in a start-up mode of operation, said start-up rotation data having a limit of a second maximum corresponding to maximum rotation speed of the compressor in the start-up mode of operation, said second maximum rotation speed being larger than said first maximum rotation speed,

selecting means for outputting said normal mode rotation data stored in said first memory means when said command signal for normal mode operation is inputted from said command means, and for outputting said start-up mode rotation data stored in said second memory means when said command signal for start-up operation is inputted from said command means, and

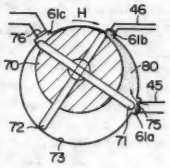
control means for controlling the rotational speed of the compressor corresponding to the output of said selecting means.

4,622,828

AIR-CONDITIONING AND REFRIGERATING SYSTEM

Kenichi Fujiwara, Kariya; Eiichi Hasada, Okazaki, and Hikaru Sugi, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Division of Ser. No. 643,382, Aug. 23, 1984, Pat. No. 4,565,072.
This application Oct. 2, 1985, Ser. No. 783,160
Claims priority, application Japan, Aug. 25, 1983, 58-155899
Int. Cl.[4] F25B *5/00*
U.S. Cl. 62—200 **3 Claims**



1. An automotive air-conditioning and refrigerating system for cooling air in an occupant room of an automobile and also cooling a space in a refrigerator mounted on the automobile, said system including:

a rotary refrigerant compressor provided with a main suction port, an auxiliary suction port and a discharge port through which the refrigerant is discharged in compressed gas phase said compressor including a housing defining therein a cylindrical chamber, a rotor rotatably mounted in said cylindrical chamber and a plurality of vanes mounted on said rotor for rotation therewith such that the vanes are moved in sliding contact with the inner peripheral surface of said cylindrical chamber, said housing, rotor and vanes cooperating together to define a plurality of working chambers each having a volume which is varied as said rotor and vanes are rotated, said main and auxiliary suction ports being formed in said housing;

a condenser having an intake side operatively connected to said discharge port of said compressor and adapted to condense the gas-phase refrigerant into liquid-phase refrigerant;

an air-conditioning circuit including a first pressure reducing means operative to expand the liquid-phase refrigerant into atomized air-conditioning refrigerant and an air-conditioner evaporator operative to evaporate the atomized refrigerant at a first evaporation pressure so that air sur-

rounding said evaporator is cooled to air condition said occupant room;

a refrigerating circuit disposed in parallel relationship to said air-conditioning circuit and including a second pressure reducing means operative to expand the liquid-phase refrigerant into atomized refrigerating refrigerant, a refrigerator evaporator operative to evaporate the atomized refrigerating refrigerant at a second evaporation pressure lower than said first evaporation pressure so that said refrigerator functions to cool said space in said refrigerator;

an air-conditioning refrigerant return passage connecting said air-conditioning evaporator to said main suction port of said compressor; and

a refrigerating refrigerant return passage connecting said refrigerator evaporator to said auxiliary suction port of said compressor;

said main and auxiliary suction ports being positioned such that the refrigerating refrigerant is first sucked through said auxiliary suction port into a working chamber in a first stage of a suction stroke thereof and the air-conditioning refrigerant is sucked through said main suction port into the working chamber in a second stage of the suction stroke, said second stage being later than said first stage;

said compressor being constructed such that the evaporated lower-pressure refrigerating refrigerant returned to said auxiliary suction port is mixed in said compressor with the evaporated higher-pressure air-conditioning refrigerant returned to said main suction port before said lower-pressure refrigerating refrigerant is compressed in said compressor to a predetermined pressure level and such that said main suction port is disposed at a position where the volume of the working chamber is being increased whereby said higher-pressure air-conditioning refrigerant is not only allowed to flow into the working chamber, when said main suction port is opened to the working chamber, due to the difference in pressure between the lower-pressure refrigerating refrigerant already sucked into the working chamber and the higher-pressure air-conditioning refrigerant returned to said main suction port, but also sucked into the working chamber due to continued increase in the volume of the working chamber caused by the rotation of the rotor subsequent to the opening of the main suction port to the working chamber.

4,622,829

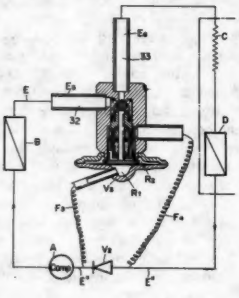
REFRIGERATING CYCLE

Tomoo Okada, Iruma, Japan, assignor to Kabushiki Kaisha Saginomiya Seisakusho, Tokyo, Japan

Filed Dec. 9, 1985, Ser. No. 806,771

Int. Cl.[4] F25B *41/04*

U.S. Cl. 62—216 **6 Claims**



1. A refrigerating system comprising a condenser and an evaporator connected in series with each other;

throttle means provided in said series connection between said condenser and said evaporator;

a rotary compressor having a delivery port and a suction port, said delivery port being connected to the condenser by means of a delivery tube, said suction port being connected to the evaporator by means of a suction tube;

a check valve provided in said suction tube;

differential pressure valve provided between said throttle means and said condenser in said series connection, said differential pressure valve having an elongated space therein including a valve section and a control section, said control section being divided by a diaphragm into first and second chambers;

a first pressure introducing tube communicating said first chamber with said suction tube on the compressor side of the check valve; and

a second pressure introducing tube communicating said second chamber with said suction tube on the evaporator side of the check valve;

said differential pressure valve including valve means provided within said valve section thereof, said valve section being formed with a primary port communicating with the condenser and a secondary port communicating with the evaporator via the throttle means, said valve means being adapted to open or block communication between said primary port and said secondary port; actuator means connecting said diaphragm and said valve means and normally urged to maintain said valve means at an open position; and seal means for providing seal between said control section and said the valve section.

4,622,830

ABSORPTION REFRIGERATION SYSTEM WITH SEPARATE HIGH- AND LOW-PRESSURE SECTIONS AND METHOD OF OPERATING SUCH A SYSTEM

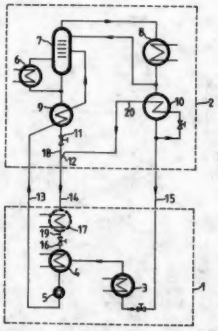
Günther Holldorff, Berlin, Fed. Rep. of Germany, assignor to Borsig GmbH, Berlin, Fed. Rep. of Germany

Filed Jul. 15, 1985, Ser. No. 754,921

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1984, 3432888

Int. Cl.[4] F25B *27/00*

U.S. Cl. 62—238.3 **6 Claims**



1. An absorption refrigeration system, comprising: a separate high-pressure section and a separate low-pressure section; said high-pressure section having a desorber, a rectifying column, a solution heat exchanger, a condenser, and a subcooler-evaporator; said low-pressure section being connected to said high-pressure section by three lines; said low-pressure section having an evaporator, an absorber, and a solution pump; a connecting line for conducting liquified refrigerant; said subcooler-evaporator located in said high-pressure section being

connected between said condenser and said connecting line for conducting liquified refrigerant; said subcooler-evaporator subcooling said liquified refrigerant before entering said connecting line for conducting liquified refrigerant; an expansion valve in an outlet line of said solution heat exchanger; vapor exit means from said subcooler-evaporator communicating with an outlet line of said expansion valve at a junction, said outlet line of said expansion valve conveying weak refrigerant solution; a connecting line leaving from said junction and functioning as an uncooled absorber in conveying said weak refrigerant solution; a further expansion valve in a line in said low-pressure section and conveying weak refrigerant solution.

4,622,831

AIR-CONDITIONING PLANT FOR MOTOR VEHICLES, ESPECIALLY FOR BUSES

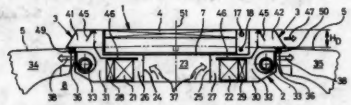
Johann Grupa, Stockdorf, Fed. Rep. of Germany, assignor to Webasto-Werk W. Baier GmbH & Co., Fed. Rep. of Germany

Filed Feb. 21, 1985, Ser. No. 703,991

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1984, 3406249

Int. Cl.[4] B60H *1/32*

U.S. Cl. 62—244 **22 Claims**



1. An air-conditioning plant for motor vehicles, especially for buses, comprising: a condenser which contains a downwardly sloping large-surface condenser block and condenser fans for carrying off condenser exhaust air; and an evaporator partitioned-off relative to the condenser which contains evaporator blocks that extend parallel to each other in a vehicle longitudinal direction, but are spaced from each in a direction transverse to said vehicle longitudinal direction in a manner forming an air intake space for the evaporator therebetween, and evaporator fans for conveying fresh air through the evaporator and into air channel means of the vehicle; wherein the air conditioning plant and the condenser thereof are constructed for being partially recessed into the roof of the vehicle in a tail area thereof with the evaporator blocks being disposed, in a direction toward a vehicle interior space, below the condenser at laterally opposite sides thereof, and with the condenser fans being disposed behind the large-surface condenser block in the tail area of the vehicle.

4,622,832

ICE MAKING MACHINE

William F. Hagen, Argyle, Tex., assignor to Turbo Refrigerating Company, Denton, Tex.

Division of Ser. No. 569,614, Jan. 10, 1985, Pat. No. 4,531,380. This application Jun. 24, 1985, Ser. No. 736,455

The portion of the term of this patent subsequent to Jul. 30, 2002, has been disclaimed.

Int. Cl.[4] F25C *5/10*

U.S. Cl. 62—344 **9 Claims**

1. Apparatus for manufacturing ice, comprising:

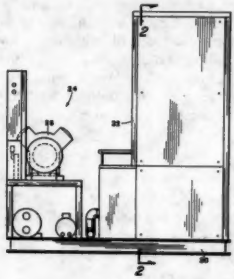
at least one elongated vertical tube having upper and lower ends;

means for chilling said tube;

means for flowing water into the upper end of said tube whereby a rod of ice is formed in said tube;

means for heating said tube to release a rod of ice to pass downwardly out said tube lower end; and

baffle means below said tube and having a first mode for conducting water flowing from the lower end of said tube into a water collection chamber and having a second mode for directing ice released from said tube onto an ice delivery chute and means coupled to said water flowing means for placing said baffle means in its first mode when



water is being delivered and in its second mode upon cessation of said water delivery.

4,622,833

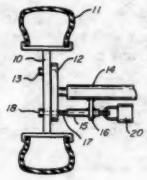
VEHICLE WHEEL LOCK

Richard L. Shepherd, P.O. Box 5832, Pasadena, Tex. 77505

Filed Sep. 10, 1984, Ser. No. 648,981

Int. Cl.[4] B60R *25/00*

U.S. Cl. 70—226 **5 Claims**



1. A locking mechanism for use in wheel supported vehicles comprising:

at least one set of wheel members mounted for rotation on a support axle for a vehicle;

chassis means for a vehicle supported on said support axle;

means for interlocking at least one of said wheel members to said support axle including first locking means fixedly attached to said support axle, said first locking means being defined by an elongated member having an elongated opening therethrough, second locking means including an elongated locking member and an opening through said wheel member, said opening being alignable with said elongated opening in said elongated member in a locking position where said elongated locking member can be received in said opening and said elongated opening for providing an interlock which prevents rotation of said wheel member relative to said support axle while said second locking means is in a cooperating relationship, said elongated member being insertable through the opening in said wheel member on the side of the wheel member away from the support axle.

4,622,834

KEY ASSEMBLY

Donald R. Hughes, 2600 Brower Ave., Simi Valley, Calif. 93065

Filed May 24, 1985, Ser. No. 737,672

Int. Cl.[4] E05B *19/10*

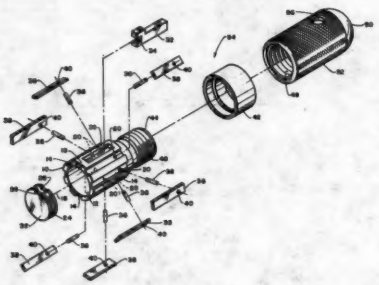
U.S. Cl. 70—395 **4 Claims**

1. Key assembly comprising:

a handle adapted to be grasped by a human being;

a barrel attached by attaching means to said handle, said barrel having a series of grooves, said barrel being tubular defining a cylindrical wall surface enclosing an interior chamber, said barrel having a longitudinal center axis, said grooves being formed within said cylindrical wall surface, the longitudinal axis of each said groove being located substantially parallel to said longitudinal center axis;

a plurality of inserts, said inserts being divided into groups of different lengths, each said insert being capable of matingly cooperating with each said groove;



retaining means for fixing the position of said inserts on said barrel, said retaining means including a collar exteriorly mounted across said inserts tightly holding said inserts in place within said grooves;

said retaining means further including a plurality of pins, a said pin to connect with a said insert, said barrel including a plurality of locating openings, a said pin to connect with a said locating opening, said pins being radially aligned with respect to said barrel; and

said retaining means further includes a plug, said plug being located within said interior chamber, said pins to connect with said plug.

4,622,835

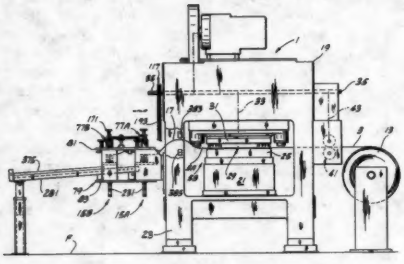
APPARATUS AND METHOD FOR CONTINUOUSLY FORMING EDGEWISE WOUND CORES

Donald K. Bisson, and Harold L. Fritzsche, both of Fort Wayne, Ind., assignors to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 660,211, Oct. 12, 1984. This application Dec. 12, 1984, Ser. No. 680,762

Int. Cl.[4] H02K *15/04*; B21C *47/00*

U.S. Cl. 72—16 **13 Claims**



1. A method of continuously forming edgewise wound cores at at least one winding station therefor from a continuous strip of ferromagnetic material having a variable thickness along the length thereof, and the at least one winding station including means operable generally for severing the continuous strip, the method comprising the steps of:

feeding the continuous strip to the at least one winding station and through the severing means and effecting the continuous formation of the edgewise wound cores at the at least one winding station from the continuous strip fed thereto;

measuring the thickness along the length of the continuous strip fed to the at least one winding station and summing at least some of the thickness measurements; and

comparing the summation of the at least some thickness measurements with a preselected value corresponding to a predetermined stack height for each of the edgewise wound cores formed at the at least one winding station and operating the severing means to sever the continuous strip at least generally when the summation of the at least some thickness measurements attains the preselected value thereby to terminate the formation of respective ones of the edgewise wound cores at the at least one winding station.

4,622,836

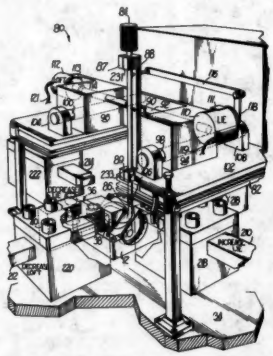
LOFT AND LIE CALIBRATION MACHINE

Dabbs C. Long, Albany, Ga.; Gerald R. Anderson, York, Pa.; Dale L. Linman, Bloomington, Minn., and Thomas M. Moore, Glen Burnie, Md., assignors to MacGregor Golf Company, Albany, Ga.

Filed Mar. 25, 1985, Ser. No. 715,699

Int. Cl.[4] B21C *51/00*

U.S. Cl. 72—31 **6 Claims**



1. A loft and lie calibration machine for measuring and adjusting the loft and lie angles with respect to specified loft and lie angles for a golf club head having a face, a back side, and a hosel with a bore therein, comprising:

a. a fixture secured to a planar base and having a cavity that conforms to the back side of the golf club head to be calibrated;

b. clamp means for engaging the face of the club head to secure the golf club head in the cavity;

c. angle measurement means mounted in fixed relationship to the base and attached fixture for determining measured loft and lie angles of the club head, the angle measurement means ccomprising:

i. a pin insertable into the bore and extending co-axially from the bore;

ii. converter means attached to the pin which converter means converts the pin's angular orientation with respect to the base into two rotational components, the first rotational component being proportional to the measured loft angle and the second rotational component being proportional to the measured lie angle; and

iii. computer means for resolving the two rotational components into measured loft and lie angles, comparing the measured loft and lie angles to the specified loft and lie angles, and calculating a deviation therefrom; and

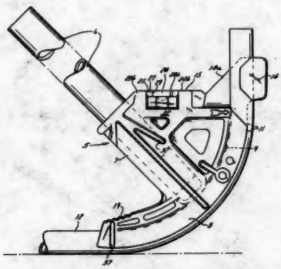
d. adjustment means mounted on the base and distributed around the fixture which adjustment means under control of the computer means selectively engage the hosel of the golf club head and, in response to the deviations, exert selective force on the hosel to bend it to eliminate the deviations.

4,622,837

TUBE BENDER WITH SPIRIT LEVEL INDICATOR

Brian A. Bergman, Milwaukee, Wis., assignor to Gardner Bender, Inc., Milwaukee, Wis.

Filed Nov. 13, 1985, Ser. No. 797,515
Int. Cl.[4] B21C *51/00*
U.S. Cl. 72—34 5 Claims



1. A tool for bending conduit and the like, comprising a body having an upwardly projecting handle supporting portion, a conduit engaging hook at a front end of the body, and an elongated bottom shoe portion extending rearward from said hook and defining a downwardly opening groove which is convexly arcuate along its length and is from side to side symmetrical to a plane of symmetry that lies in the body, said tool further comprising an elongated spirit level vial on the body for indicating the attainment of a predetermined bend angle in conduit being bent by means of the tool, said tool being characterized by:

A. said vial being cylindrical and straight along its length;

B. said body being formed with a pair of spaced apart pads, each having thereon a flat surface which extends in a direction away from said plane of symmetry and towards one side of the body, said flat surfaces on said pads

(1) being opposed to one another,

(2) being spaced apart in the direction lengthwise of said shoe portion by a distance at least equal to the length of the vial, and

(3) defining between them a space which opens unrestrictedly towards said one side of the body so that the vial is insertable between said flat surfaces by movement transverse to its length towards said plane of symmetry; and

C. each said pad having a vial supporting portion projecting from its said flat surface partway towards the other pad and defining a recess that opens towards said side of the body and towards the other pad and wherein an end portion of the vial is received upon insertion of the vial into said space, said recess having a concavely arcuate surface to which said end portion of the vial is adhesively secured and which

(1) is curved on a radius substantially equal to that of the vial and

(2) embraces the vial around no more than half of its girth and at its side adjacent to said plane of symmetry,

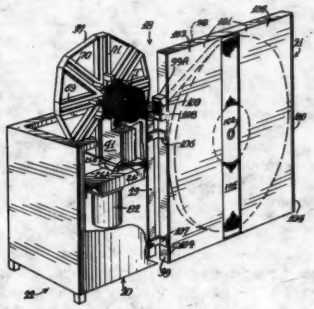
said vial supporting portions of said pads being spaced apart by a substantial distance to leave the medial portion of the vial open to view from above the body.

4,622,838

APPARATUS FOR MANUFACTURING FLEXIBLE CORRUGATED TUBES

Gunter Schafer, Ft. Lauderdale, Fla., assignor to Security Lumber & Supply Co., Bradley, Ill.

Continuation-in-part of Ser. No. 663,215, Oct. 22, 1984, abandoned, which is a continuation-in-part of Ser. No. 521,090, Aug. 10, 1983, abandoned, which is a continuation-in-part of Ser. No. 425,532, Sep. 28, 1982, abandoned. This application Jan. 23, 1986, Ser. No. 821,709
Int. Cl.[4] B21C *37/12*
U.S. Cl. 72—49 26 Claims



1. Apparatus for helically curling longitudinally corrugated thin strip material into a flexible corrugated tube, said apparatus comprising, in combination:

(a) a curling unit comprising,

(1) a base that has opposite lateral sides,

(2) two forwardly extending rotatably driven input rollers carried on said base near one of said opposite lateral sides, said input rollers having intermeshing arcuate lands and grooves forming a nip which matches the corrugations of a strip of material to be helically curled,

(3) two forwardly extending rotatably driven output rollers supported on said base, said output rollers having intermeshing arcuate lands and grooves forming a nip to receive a strip of material from said input rollers,

(4) idler rollers supported on the base which have arcuate lands and grooves to guide said strip of material from the input rollers in a helical path in which each successive turn of the strip passes through the nip of the output rollers in partially overlapped relationship with the strip entering said output rollers, and

(5) locking means for crimping overlapping parts of said strip to lock said parts to one another; and

(b) a cassette having

(1) a frame with a plurality of sides,

(2) means on said frame to rotatably mount a reel of said thin strip material,

(3) a strip outfeed opening in one of said frame sides,

(4) two guide rollers in said outfeed opening, said guide rollers having intermeshing arcuate lands and grooves forming a nip which matches the corrugations in said strip of material, and

(5) means detachably connecting said cassette to the base with said one of said frame sides confronting said one lateral side of the base and with the nips of said guide rollers and of said input rollers immediately adjacent one another and substantially coplanar.

4,622,839

APPARATUS FOR MANUFACTURING SPRING UNIT

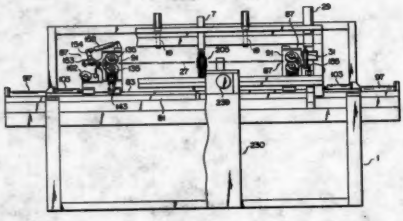
Noboru Sasaki; Yasuji Iwata, and Teruo Mukai, all of Tokyo, Japan, assignors to France Bed Co., Ltd., Tokyo, Japan

Filed Dec. 30, 1985, Ser. No. 814,608

Claims priority, application Japan, Jan. 11, 1985, 60-2942; Jan. 11, 1985, 60-2943

Int. Cl.[4] B21F *3/12*

U.S. Cl. 72—138 **7 Claims**



1. An apparatus for manufacturing a spring unit, comprising:

a frame structure;

a guide rail extending on said frame structure;

a pair of movable bodies which are arranged at a predetermined distance from each other on said guide rail so as to travel thereon;

means for driving said bodies along said guide rail;

means, arranged on said pair of movable bodies, for respectively holding two ends of a single wire;

grip means, arranged on said frame structure, for gripping an intermediate portion of the single wire held by said holding means so as to prevent the wire from sliding along a longitudinal direction thereof;

a swing arm, axially and swingably supported on each of said movable bodies;

forming rollers pivotably fixed to said swing arms to perform a swinging movement therewith, said forming rollers upon the swinging movement being abuted against the ends of the single wire which extend from corresponding holding means, thereby bending the ends of the single wire, after the swinging movement of said forming rollers and while said pair of movable bodies approach each other, the wire end being extended from said holding means and being abuted against said forming rollers, thereby spirally forming the ends of the single wire with said forming rollers;

guide means, interposed between said forming rollers and said holding means, for guiding the single wire extending from said holding means toward said forming rollers, a diameter of a coil of the wire being determined by a distance between said guide means and said forming rollers; and

a pitch rod, interposed between said guide means and said forming rollers, for determining a pitch of coils formed by said guide means and said forming rollers.

4,622,840

METHOD FOR DRAWING TELESCOPING TUBES FOR TORQUE TRANSMISSION

Harold R. Diffenderfer, and George S. Rowley, both of Pottstown, Pa., assignors to Neapco, Inc., Pottstown, Pa.

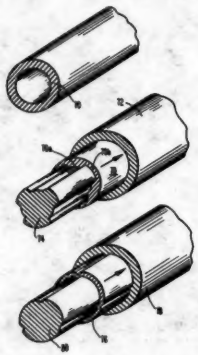
Division of Ser. No. 505,770, Jun. 20, 1983, abandoned. This application Jul. 16, 1985, Ser. No. 755,669

Int. Cl.[4] B21C *1/24*

U.S. Cl. 72—283 **12 Claims**

1. The method of manufacture of a telescoping torque transmitting joint comprising inner and outer members slidable with respect to one another, said members comprising inner and outer cylindrical tubes having inwardly extending longitudinal lobes for mating with one another to permit transmission of torque from one member to the other, said mating portions of said lobes having mating surfaces shaped for interaction with one another, such that the mating surfaces of the inner wall of the outer tube and the outer wall of the inner tube have substantial width perpendicular to the length of said tube, wherein the wall thickness of said tube at the point said lobes begin to extend inwardly from the outer diameter of said tube to form said lobes is thicker that the wall thickness of said tubes at regions away from said lobes, comprising the steps of:

drawing a cylindrical tube simultaneously through a die and over a mandrel to form a precursor tube, said die having an inner cylindrical surface and said mandrel having external longitudinally extending grooves therein so that said tube wall is reduced by a different amount by said mandrel and said die at the regions of said mandrel having said grooves formed therein than at the regions of said mandrel not having said grooves formed therein so as to shape said



precursor tube into an intermediate precursor tube having inwardly extending thickened wall portions in the regions at which said inwardly extending lobes are to be formed; and thereafter drawing said intermediate precursor tube simultaneously through a finishing die and over a finishing mandrel, said finishing die having an inner surface having external longitudinally extending projections corresponding in number to the number of lobes to be formed in said tube, said finishing mandrel having a corresponding number of external longitudinally extending grooves, said projections of said finishing die and said grooves of said finishing mandrel being aligned with said thickened wall portions of said intermediate precursor tube so that said finishing die and said finishing mandrel cooperate to produce within said thickened wall portions said inwardly extending lobes extending longitudinally along said tube.

4,622,841

METHOD OF FORMING LONG METAL TUBING TO TAPERED SHAPE

Kelichiro Yoshida, 641, Mobara, Mobara City, Chiba Prefecture, Japan (297)

Division of Ser. No. 512,126, Jul. 8, 1983, Pat. No. 4,498,321. This application Sep. 25, 1984, Ser. No. 654,245

Claims priority, application Japan, Jul. 9, 1982, 57-120346

Int. Cl.[4] B21B *17/14;* B21D *41/04*

U.S. Cl. 72—367 **4 Claims**

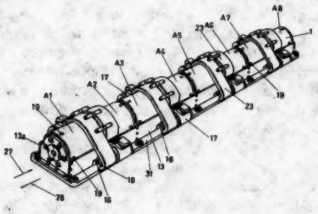
1. A method of forming a tapered multiple-stepped metal tube in a single-pass swaging operation, comprising:

providing a swaging machine having a plurality of individual swaging units arranged in tandem, each of said swaging units being operated independently of each other swaging unit, each successive one of said individual swaging units having a die set of progressively smaller diameter

to form a corresponding longitudinal section of a multiple-stepped tube;

operating a first swaging unit of said plurality of swaging units while introducing a tubular blank of uniform diameter over the length thereof to the swaging action of the die set of said first swaging unit;

operating a second swaging unit of said plurality of swaging units while continuously introducing said tubular blank further through said first swaging unit and into said second swaging unit, whereby a section of said tubular blank which was reduced by the action of said first swaging unit is further reduced by the action of said second swaging unit;



continuously introducing said tubular blank into the remainder of said plurality of swaging units until a section of said tubular blank which was first introduced into said first swaging unit is introduced into a final swaging unit of said plurality of swaging units arranged in tandem to form a multiple-stepped tube; and

withdrawing the thus formed multiple-stepped tube back through said swaging units to remove said multiple-stepped tube from said swaging machine;

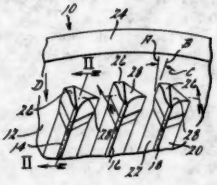
whereby a tapered multiple-stepped tube having longitudinal sections of gradually reduced diameters is formed in a single-pass by means of a plurality of swaging units which are arranged in tandem.

4,622,842

DIE FOR EXTRUDING TOOTHED HELICAL MEMBERS

Benjamin I. Bachrach, Dearborn; William J. Fuhrman, Bloomfield Hills; Daniel W. Hall, Plymouth, and Gotz S. Hauser, Southfield, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 13, 1984, Ser. No. 681,345
Int. Cl.[4] B21C *25/02*
U.S. Cl. 72—467 **4 Claims**



1. A hollow die through which a blank is extruded to form teeth on the surface of the blank comprising:

an inner surface having a central axis, said inner surface defining the passageway through which the blank is extruded, said passageway extending along the axis from the extrusion entry end of the die; and

spaced helical die teeth extending along the inner surface, having a helix axis that is inclined with respect to the central axis, each tooth having a base located on the inner surface and a crown located radially inward from the base;

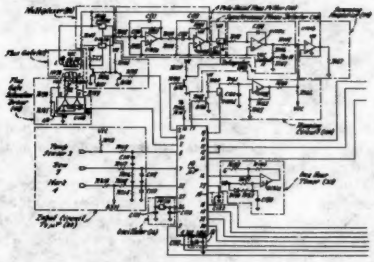
the die teeth including a first planar face extending across a portion of the width of the die teeth and located near the axial end of the die where the blank enters the die, the planar face being directed substantially perpendicular to the helix axis, inclined from the base to the crown radially inward toward the central axis and inclined axially away from the entry and of the die.

4,622,843

SIMPLIFIED CALIBRATION TECHNIQUE AND AUTO RANGING CIRCUIT FOR AN ELECTRONIC COMPASS CONTROL CIRCUIT

Ronald F. Hormel, 40727 Oakwood Ct., Mount Clemens, Mich. 48044

Filed Dec. 27, 1985, Ser. No. 813,897
Int. Cl.[4] G01C *17/38, 17/30*
U.S. Cl. 73—1 E **4 Claims**



4. A calibration technique for use in an electronic compass control circuit that includes a microcomputer, a flux-gate, a flux-gate driver, a bandpass filter, a synchronous detector, an integrator and a summing amplifier; the control circuit equipped with a ranging circuit that includes an operational amplifier with resistive negative feedback connected to the output of the integrator; an RC charging network connected to the non-inverting input to the operational amplifier; a gate switch connected between the RC charging network and the microcomputer such that the microcomputer charges the RC charging network when the gate switch is closed; and comparator means to respond to the output of the integrator to control the operation of the gate switch; the calibration technique for each magnetic component comprising:

holding the gate switch closed;

presenting a high voltage level to the non-inverting input to the operational amplifier that charges the RC charging network;

monitoring the output voltage of the integrator;

opening the gate switch when the output of the integrator is within a calibration range;

monitoring the charge time of the RC charging network;

storing the charge time;

controlling the gate switch for the charge time associated with each magnetic component whenever that component is measured.

4,622,844

OXYGEN SENSOR MONITOR

Joseph V. Bienkowski, Fostoria, Ohio, assignor to Allied Corporation, Morristown, N.J.

Filed Apr. 22, 1985, Ser. No. 725,857
Int. Cl.[4] G01D *18/00*
U.S. Cl. 73—1 G **2 Claims**

1. A portable monitor for use in a vehicle to check the operation of an oxygen sensor comprising:

a housing having a rectangular body with a projection ex-

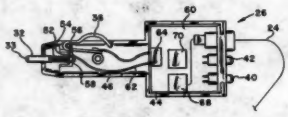
tending therefrom, said projection having a wall with a slot therein;

a first probe having a first end that extends through said projection and a second end that extends through said wall;

a spring connected to said wall for urging said second end of probe toward said wall;

a second probe having a portion that extends through said projection;

a receptacle connected to a source of electrical voltage and an electrical ground, said projection being connected to said receptacle, said spring urging said first probe into electrical contact with said electrical voltage and said second probe engaging said receptacle and thereby being connected to said electrical ground;



regulator means located in said rectangular body connected to said source of electrical voltage to establish a stable source of electrical voltage;

a first indicator light connected to said regulator means and electrical ground through said second probe for informing an operator of the availability of stable electrical voltage;

buffer means connected to said regulator, electrical ground and oxygen sensor for generating an output signal corresponding to an operational signal developed in said oxygen sensor;

means for comparing said output signal with a reference signal to develop an indicator signal; and

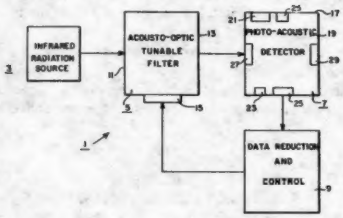
a second indicator light connected to said regulator and responsive to said indicator signal for providing an operator with an indication of the functioning of said oxygen sensor.

4,622,845

METHOD AND APPARATUS FOR THE DETECTION AND MEASUREMENT OF GASES

Frederick M. Ryan, Loyalhanna Township, Westmoreland County, Pa., and Donald W. Feldman, Los Alamos, N. Mex., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 21, 1985, Ser. No. 714,582
Int. Cl.[4] G01N *21/00*
U.S. Cl. 73—24 **4 Claims**



1. An apparatus for the detection of a selected species in a gas sample comprising:

a photo-acoustic detector means including walls defining an enclosed chamber with valve means operatively associated with said walls for introducing the gas sample into said chamber and for vacating the gas sample therefrom, and with means for detecting an acoustic disturbance within said chamber, and with window means on opposite sides of said chamber for the passage of infrared radiation therethrough, said enclosed chamber being resonant at 4 kHz;

an infrared radiation source means operatively associated with said photo-acoustic detector means wherein a narrow bandwidth portion of infrared radiation is directed through said chamber for interaction with the sample gas in said chamber to generate an acoustic disturbance within said chamber in the presence of a selected species; and

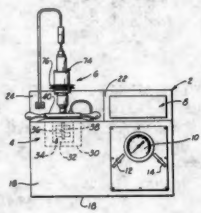
an acousto-optic tunable filter disposed between said photo-acoustic detector means and said infrared radiation source means comprising an optically aligned acousto-optic crystal through which infrared radiation is passed, an acoustic transducer means coupled to a variable frequency energy source pulsed at a rate of 4 kHz and to the acousto-optic crystal in order to pulse said acousto-optic tunable filter at a rate of 4 kHz at a selected frequency to launch acoustic waves in the crystal in order to interact with a selected narrow bandwidth portion of the infrared radiation to make said portion distinguishable from the remaining infrared radiation, which narrow portion is a function of the selected frequency of the rf energy and the acoustic waves launched into said crystal wherein the acoustic disturbance within said chamber is a pulsed disturbance at a rate of 4 kHz.

4,622,846

CONSISTENCY AND STATIC GEL STRENGTH MEASURING DEVICE AND METHOD

John J. Moon, Jr.; Jim B. Surjaatmadja, and Mark C. Ehlert, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Nov. 5, 1985, Ser. No. 795,290
Int. Cl.[4] G01N *11/14*
U.S. Cl. 73—59 **20 Claims**



1. An appartus for measuring at least two characteristics of a substance, comprising:

receptacle means for receiving the substance, said receptacle means having a stationary member and a rotatable member disposed in rotative connection with said stationary member;

one and only one drive means for rotating said rotatable member relative to said stationary member so that said rotatable member acts on the substance at a selectable one of a first speed, at which a first one of the at least two characteristics is determined, and a second speed, at which a second one of the at least two characteristics is determined; and

sensing means for sensing a responsive force acting through said rotatable member and said drive means when said drive means rotates said rotatable member and for converting said responsive force into a measurement signal corresponding to a respective one of a measurement of the first one of the characteristics when said drive means rotates said rotatable member at the first speed and a measurement of the second one of the characteristics

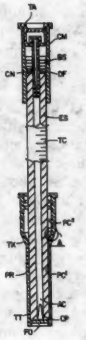
when said drive means rotates said rotatable member at the second speed.

4,622,847

APPARATUS FOR MEASURING THE RATE OF ERYTHROSEDIMENTATION OF THE BLOOD

Sergio Paoletti, and Francesco Leopardi, both of Milan, Italy, assignors to L.P. Italiana S.p.A., Italy

Filed Oct. 7, 1983, Ser. No. 540,601
Claims priority, application Italy, Nov. 5, 1982, 24096 A/82
Int. Cl.[4] G01N *15/04*
U.S. Cl. 73—61.4 **9 Claims**



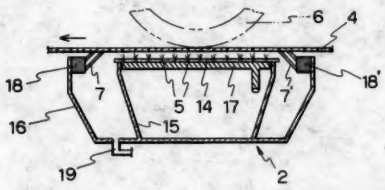
1. Apparatus for measuring the rate of erythrosedimentation characterized in that it comprises a test tube (PR) having a cylindrical portion (PC^1), a calibrated tube (TC) (pipette) dimensioned to be a sliding and sealing fit in the cylindrical portion (PC^1) of the test tube (PR), the top of said calibrated tube (TC) being provided with an overflow sleeve (BS) for receiving, in use, excess blood from the test tube.

4,622,848

FLAT BELT TYPE TESTING APPARATUS FOR MEASURING THE CORNERING CHARACTERISTICS OF A TIRE

Terumasa Doi, Ikeda, Japan, assignor to Sumitomo Rubber Industries, Ltd., Kobe, Japan

Filed Jul. 24, 1985, Ser. No. 758,239
Claims priority, application Japan, Aug. 7, 1984, 59-165800
Int. Cl.[4] G01M *17/02*
U.S. Cl. 73—146 **10 Claims**



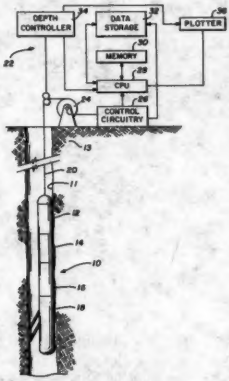
1. A flat belt type testing apparatus for measuring the cornering characteristics of a tire, comprising an endless steel flat belt conveyer system having a mechanism for bearing a load by water pressure, and a loading mechanism which supports a tire rotatably and is vertically movable in order to apply a desired load to a tire being in contact with a traveling endless steel belt at a desired camber angle or slip angle; said mechanism for bearing a load by water pressure having an air blower mechanism placed between a base plate and a wiper for blowing air against the reverse side of the endless steel belt in order to remove waterdrops from the reverse side of the endless steel belt.

4,622,849

METHOD AND APPARATUS FOR DETERMINING CHARACTERISTICS OF CLAY-BEARING FORMATIONS

Walter H. Ferti, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 416,826, Sep. 13, 1982. This application Jun. 27, 1985, Ser. No. 749,377
Int. Cl.[4] E21B *49/00*
U.S. Cl. 73—152 **12 Claims**



1. A method of determining characteristics of shales in subsurface earth formations, comprising the steps of:

determining the volume of clay contained in said subsurface earth formations;

determining a first property related to the presence of exchangable cations of said shales in said formations; and

determining a second property related to the potential clay swelling of said shales in said formations, said second property determined in response to said volume of clay and said first property.

4,622,850

MARINE PITOT TUBE

James W. Gaffrig, 5212 N. Glenwood Ave., Chicago, Ill. 60640

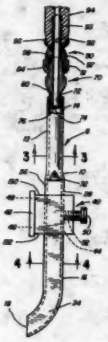
Filed May 10, 1985, Ser. No. 733,489
Int. Cl.[4] G01C *21/00*
U.S. Cl. 73—182 **8 Claims**

1. In a speed indicating system for a boat, said system being of the pressure responsive type having a pitot tube with a sensing opening connected in pressure transmitting communication with a pressure operated speedometer, said pitot tube having a longitudinal axis and said pitot tube having a connection portion having a circular cross section and a sensing portion having a pair of substantially flattened walls laterally spaced from each other and connected at each of two sides by a curved connective wall portion for forming a cross section having a long axis parallel to said flattened walls and a short axis normal to said bottom walls, the length of the long axis of said sensing portion being greater than the diameter of said connection portion, said sensing portion of said pitot tube having a terminal end portion having a sensing opening for receiving fluid pressure and said connection portion of said pitot tube having a terminal end having a portion for being removably sealingly engaged with a connection fitting, said fitting being engaged in fluid pressure transmitting communication with said pressure operated speedometer, an improved

mounting bracket for mounting said pitot tube to a portion of a boat, said mounting bracket comprising, in combination:

mounting means for being rigidly engaged to a boat;

a pitot tube mounting member fixedly engaged with said mounting means, said mounting member having an upper surface portion and a lower surface portion and a pitot tube receiving opening extending from said upper surface portion to said lower surface portion, said pitot tube receiving passage being structured and arranged for longitudinally slidably receiving each said connected portion of said pitot tube and said sensing portion of said pitot tube;



means for selectively maintaining said pitot tube in a desired longitudinal position with respect to said mounting member whereby said sensing opening may be selectively positioned in an optimum position below said lower surface of said mounting member; and

said receiving opening including a passage circular in cross section and sized for longitudinally slidingly receiving said connection portion of said pitot tube and a pair of substantially diametrically opposed grooves extending along said circular cross section passage for longitudinally slidingly receiving said cureved connective wall portions of said sensing portion of said tube.

4,622,851

DEVICE FOR MEASURING LUBRICATING OIL TEMPERATURE SUPPLIED TO AN INTERNAL COMBUSTION MOTORCYCLE ENGINE

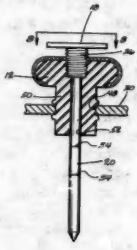
Thomas E. Wilson, 710 E. Ten Mile Rd., Ferndale, Mich. 48220

Continuation of Ser. No. 899,803, Apr. 25, 1978, Pat. No. 4,285,238. This application Oct. 10, 1980, Ser. No. 195,817

The portion of the term of this patent subsequent to Aug. 25, 1998, has been disclaimed.

Int. Cl.[4] G01K *1/14*

U.S. Cl. 73—292 **1 Claim**



1. A device for measuring the temperature of engine lubricating oil in an oil reservoir for an internal combustion engine, said oil reservoir having a portion defining an aperture through its wall, said device comprising:

a thermometer having a closure body, said closure body mounted to said aperture, said thermometer further having temperature indicator means and a temperature sensing stem extending from said temperature indicator means with said closure body interposed said temperature indicator means and said temperature sensing stem, said temperature indicator means having one end, a dial with indicia corresponding to various temperatures at said one end and an opposite end mounted contiguous to said closure body and perpendicular to said temperature sensing stem, said opposite end including an adjustment member for adjusting said indicator with respect to said closure body, said closure body having a sealing surface configured to cooperate with said aperture for isolating the engine lubricating oil from particulate contaminants originating from sources external to the oil in said oil reservoir, and thermometer further being positioned in said aperture with said temperature indicator means disposed to the exterior of said oil reservoir such that irrespective of the angular position of said closure body in said aperture, said dial being readable by a viewer positioned above said engine, said thermometer further being attached to said oil reservoir with said temperature sensing stem projecting through said aperture in said oil reservoir and into the interior of said oil reservoir in at least partially submerged relationship with the oil in said oil reservoir;

said closure body further having an axially aligned bore for axial receipt of said temperature sensing stem, said bore having an inner diameter slightly smaller than the outer diameter of said temperature sensing stem and an axially aligned counterbore for receipt of said adjustment member, said counterbore and adjustment member having complementary interfitting threads such that said adjustment member is threadably received within said counterbore and said temperature sensing stem is tightly received within said bore ensuring a tight impermeable seal between said indicator and said closure body; and

means for indicating the indicia corresponding to the temperature of the oil in said oil reservoir at any given time as sensed by said temperature sensing stem.

4,622,852

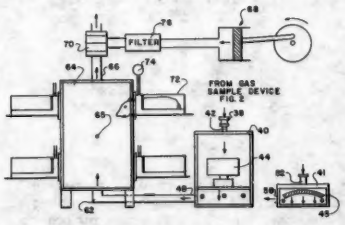
GAS MASK FILTERS TEST APPARATUS USING A BREATHING PUMP

John T. James, Severn; Leonard C. Buettner, Baltimore, and James A. Genovese, Edgewood, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 6, 1985, Ser. No. 772,989

Int. Cl.[4] G01N *15/00*

U.S. Cl. 73—865.6 **5 Claims**



1. An apparatus for testing a filter for a gas-mask comprising:

a gaseous supply means for supplying a gas sample to a flow system,

a box containing a filter in said flow system, said box having an inlet and outlet,

said inlet communicating with said gaseous supply means in said flow system for supplying said gas sample to said filter,

said outlet for discharging said gas sample to said flow system as an effluent after said gas sample passes through said filter,

an inhalation chamber defining a space in said system,

said inhalation chamber having an inlet and outlet,

said inhalation chamber inlet communicating with said box outlet in said flow system for supplying said effluent into said space,

said inhalation chamber outlet for discharging said effluent into said flow system from said space,

at least one plethysmographic box connected to said inhalation chamber for receiving a test animal,

said plethysmographic box having an opening communicating with said inhalation chamber space,

said opening adapted to receive the head of said test animal, respiration response means connected to said plethysmographic box for measuring said test animal's response,

a breathing pump connected to said inhalation chamber outlet,

said pump drawing said effluent from said inhalation chamber space simulating human respiration,

a plurality of test ports for removing a part of said gas sample for chemical analysis,

said ports provided on said gaseous supply means, said box containing said filter, and said inhalation chamber,

a flow-temperature-humidity control unit having an inlet and an outlet,

said flow-temperature-humidity control unit inlet for admitting clean air,

gas metering means communicating between said gas supply means and said box,

a mass flow control unit connected between said gas metering means and said flow-temperature-humidity control unit,

said outlet of said flow-temperature-humidity control unit communicating with said system between said gas metering means and said box,

said mass flow control unit for controlling the flow of air from said flow-temperature-humidity control unit and the flow of said gas sample from said metering means, and

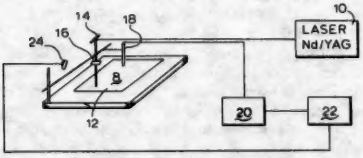
an expandable bag having an opening communicating with said inlet of said box containing said filter.

4,622,853

LASER INDUCED ACOUSTIC GENERATION FOR SONIC MODULUS

Mary A. Leugers, Midland, Mich., assignor to Union Camp Corporation, Wayne, N.J.

Filed Aug. 23, 1985, Ser. No. 768,910
Int. Cl.[4] G01N *29/00*; D21F *7/00*
U.S. Cl. 73—597 **3 Claims**



1. A method of non-destructively testing, free of physical contact, a physical property of a moving web or sheet of paper, which comprises;

beaming a source of short light pulses and amplitudes at said moving web or sheet; and

measuring the velocity of the ultrasonic waves produced in the web or sheet by the thermal effect induced by the light pulses.

4,622,854

ROUNDED WALL SURFACE ACOUSTIC WAVE SENSORS

Stanley Locke, Norwalk; Bikash K. Sinha, West Redding, both of Conn., and Michael P. Ekstrom, Paris, France, assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Dec. 31, 1984, Ser. No. 687,715
Int. Cl.[4] G01L *11/00*
U.S. Cl. 73—703 **27 Claims**

1. A pressure sensor comprising:

a cylindrical body made of two halves joined along an axial plane;

an axially extending channel formed in each half to face that of the other, each channel having a bottom;

an axially extending flat formed at the bottom of each channel; and

a respective SAW device formed on each flat;

wherein at least one of the channels has a curved sidewall adjacent the flat, and wherein the two channels form a sealed cavity.

4,622,855

LOW THERMAL RESPONSE TIME SURFACE ACOUSTIC WAVE SENSORS

Bikash K. Sinha, West Redding, and Stanley Locke, Norwalk, both of Conn., assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Dec. 31, 1984, Ser. No. 687,716
Int. Cl.[4] G01L *11/00*
U.S. Cl. 73—703 **18 Claims**

1. A pressure sensor comprising:

a generally cylindrical body made of two halves joined along an axial plane;

an axially extending channel formed in each half to face that of the other, each channel having a bottom and walls, said channels forming a sealed cavity enclosed by said body;

an axially extending flat formed at the bottom of each channel; and

a respective SAW device formed on each flat;

wherein one of the halves has a flat exterior surface which reduces the radial thickness of the body adjacent the flat to thereby make the thermal responses of the two SAW devices more equal than in the absence of said exterior flat surface.

4,622,856

SENSOR WITH POLYCRYSTALLINE SILICON RESISTORS

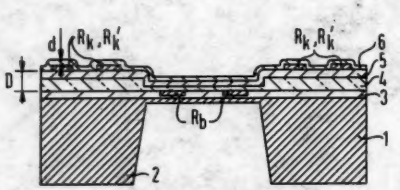
Josef Binder; David Cutter, both of Munich; Wolfgang Henning, Zorneding; Hans-Christian Schaber, Germering; Frank Möllmer, Pentling, and Hansjörg Reichert, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 25, 1984, Ser. No. 614,265

Claims priority, application Fed. Rep. of Germany, May 30, 1983, 3319605

Int. Cl.[4] G01L 9/06

U.S. Cl. 73—727 23 Claims



1. Sensor with polycrystalline silicon resistors which are applied to a substrate and are covered with a dielectric passivating layer, in which temperature coefficients and resistance values of the resistors are adjusted and equalized by laser trimming, by doping the resistors and by healing with partial recrystallization of the resistors by laser healing with application of laser radiation or oven healing.

4,622,857

PRESSURE GAUGE AND REGULATOR

Donald D. Nelson, Springfield, Minn., assignor to Sanborn Manufacturing Company, Inc., Springfield, Minn.

Filed Oct. 16, 1984, Ser. No. 661,370

Int. Cl.[4] G01L 7/16

U.S. Cl. 73—744 15 Claims

12. A fluid pressure gauge and regulator comprising:

a manifold block having a longitudinal bore, inlet port means for supplying a fluid under pressure to a first end of the bore, and an outlet;

a plunger slidably received in the bore and sealingly engaging walls of the bore;

compression spring means carried within the bore and biasing the plunger toward said first end thereof, the spring means having a spring constant linearly relating longitudinal movement of the plunger to fluid pressure within the first end of the bore, the manifold block having a viewing port enabling exterior viewing of the longitudinal position of the plunger within the bore;

valve means including a valve seat and a mating movable valve body for selectively releasing fluid from the inlet port means to the outlet;

piston means movable in response to outlet fluid pressure for controlling the valve;

spring means for selectively urging the piston against outlet fluid pressure;

the piston means including vent means sealed by the valve body but disengageable therefrom so that when fluid pressure exceeds the spring means pressure the piston and vent means move away from the valve body, breaking said seal and allowing fluid to escape through the vent means until spring means pressure again exceeds fluid pressure.

4,622,858

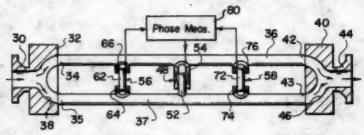
APPARATUS AND METHOD FOR CONTINUOUSLY MEASURING MASS FLOW

Dennis S. Mizerak, Brunswick, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Mar. 25, 1985, Ser. No. 715,692

Int. Cl.[4] G01F 1/84

U.S. Cl. 73—861.38 10 Claims



1. An apparatus for measuring mass flow of a fluid flow, comprising:

a pair of straight parallel conduits each having opposite ends, as well as an axis and a mid-point between said opposite ends;

support means connected to said conduits for holding said opposite ends at substantially fixed positions;

connector means connected to said support means for supplying a fluid flow whose mass flow rate is to be measured to said pair of parallel conduits, each conduit receiving about one half of the fluid flow at one end of said support means and recombining said fluid flow at the other end of said support means;

drive means associated with said conduits for oscillating said conduits towards and away from each other at a selected frequency in a direction transverse to their respective axis and substantially at their respective mid-point; and

at least one sensor for sensing motion of said conduits at a sensing point spaced from each mid-point and from said opposite ends for sensing any phase difference of the selected frequency between said parallel conduits.

4,622,859

TRANSFER GEAR ASSEMBLY

Donald E. Hobson, Leo, Ind., assignor to Dana Corporation, Toledo, Ohio

Filed Oct. 9, 1984, Ser. No. 658,572

Int. Cl.[4] F16H 1/14, 57/02; F16D 25/08

U.S. Cl. 74—15.88 2 Claims

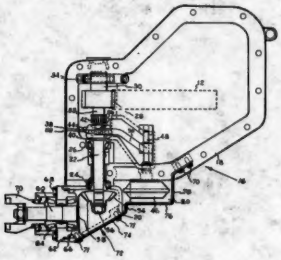
1. A transfer gear assembly for use in a vehicle having a transaxle, said transaxle having a housing and an output gear, said transfer gear assembly comprising:

a case adapted to be carried by the transaxle housing, first and second axially spaced coaxial shafts rotatably journalled in said case, a first gear mounted on said first shaft for engagement with said output gear, a clutch actuable between a disengaged position and an engaged position to connect said first and second shafts for conjoint rotation, a second bevel gear fixed to said second shaft, a nut threaded onto said second shaft to secure said second bevel gear, a third shaft mounted in said case having an axis of rotation oriented transverse to the axis of rotation

of said first and second shafts, and a third bevel gear fixed to said third shaft and engaged with said second bevel gear,

said case having a wall disposed at an oblique angle relative to the axes of rotation of said first and second coaxial shafts and said third shaft, said wall defining an access opening aligned with the axis of rotation of said first and second coaxial shafts to allow insertion and removal of said nut, said second gear, and said second and third shafts,

a vacuum actuator having a diaphragm canister mounted externally on said case adjacent and spaced from said access opening, said vacuum actuator having a rod extending parallel to the axis of said first and second coaxial



shafts into said case and into engagement with said clutch, said vacuum actuator for actuating said clutch between said engaged and disengaged positions, and

a combined cover plate and shield attached to said case covering said access openwing and at least partially surrounding said diaghragm canister, wherein said combined cover plate and shield has a first planar portion disposed at said oblique angle to the axis of rotation of said first, second and third shafts to fit flush against said wall defining said access opening, and wherein the portion of said combined cover plate and shield surrounding said at least a portion of said vacuum canister is spaced from said case to accommodate the external mounting of said diaphragm canister.

4,622,860

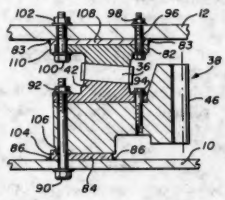
METHOD AND APPARATUS FOR SWING GEAR AND BEARING ASSEMBLY FOR POWER MINING SHOVEL

Richard J. Cametti, and Rodney A. Mitton, both of Marion, Ohio, assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Jun. 24, 1985, Ser. No. 747,849

Int. Cl.[4] **B21D** *53/28;* **B66C** *23/26;* **F16H** *55/12*

U.S. Cl. 74—448 **30 Claims**



1. An improved swing gear and swing gear bearing assembly for a power mining shovel having an upper frame assembly coupled to a lower frame assembly for relative rotation by said swing gear assembly comprising:

a. a swing gear locating member rigidly attached to a first one of said frame assemblies for accurately positioning said swing gear and preventing linear sliding movement of said gear with respect to said first one of said frame assemblies,

b. said gear locating member comprising a plate having a vertical annular projection thereon, said annular projection having a diameter such that said projection abuts the inner periphery of said annular swing gear whereby said gear is prevented from sliding linearly with respect to said first one of said frame assemblies,

c. at least first and second matching annular gear segments forming a unitary swing gear when joined, and

d. means for removably attaching said gear segments to said locating member to form a unitary swing gear assembly accurately positioned on said first one of said frame assemblies whereby the swing gear may be removed and replaced without total separation of the upper and lower frame assemblies.

4,622,861

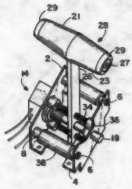
ACTUATOR MECHANISM

Stephen Hill, Nevada City, Calif., assignor to The Grass Valley Group, Inc., Grass Valley, Calif.

Filed Apr. 29, 1985, Ser. No. 728,067

Int. Cl.[4] **G05G** *5/16*

U.S. Cl. 74—531 **4 Claims**



1. An actuator mechanism, comprising a frame member defining an interior space, an elongate shaft that traverses said interior space and is mounted so as to be rotatable about its longitudinal axis with respect to the frame member, and a rigid member secured to the shaft and extending within said space radially away from the longitudinal axis of the shaft, one of said members having first and second substantially parallel surfaces that confront the other of said members, and the actuator mechanism further comprising first and second friction assemblies interposed between said other member and said first and second surfaces respectively, each friction assembly comprising a body of friction material engaging one of said surfaces, and a compression spring effective between said other member and the body of friction material for urging the body of friction material against the surface that it engages, the body of friction material and the spring being held captive between said other member and the surface engaged by the body of friction material.

4,622,862

ACTUATOR ROD FOR PUSH-PULL MECHANISMS

Daniel Lavely, Mt. Clemens, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

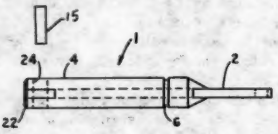
Filed May 16, 1985, Ser. No. 734,523

Int. Cl.[4] **G05G** *1/02*

U.S. Cl. 74—588 **8 Claims**

1. An actuator rod for push-pull mechanisms comprising an elongate rod member having a first hole therethrough at a first end thereof and a second hole therethrough at a second end thereof, an elongate jacket member having a longitudinally extending cavity therethrough for receiving the rod member therein and registration of the first end of the rod member, the jacket member including an opening therethrough and positioned such that when the first end of the rod member is regis-

tered within the cavity, the first hole is aligned with the opening, said rod member and said jacket member being held together by a pin which also connects the actuator rod to another associated device in said push-pull mechanism.



4,622,863

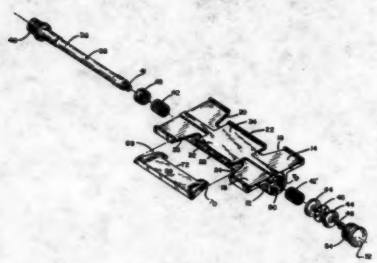
SHOE CLEAT ENGAGEMENT BICYCLE PEDAL

Stanley D. Denker, Rte. 3, New Richmond, Wis. 54017

Filed Oct. 22, 1984, Ser. No. 663,595

Int. Cl.[4] G05G *1/16*

U.S. Cl. 74—594.6 **7 Claims**



1. An improved bicycle pedal comprising:

(a) a foot engaging member having a centrally disposed tubular segment with generally flat, integrally formed, wing elements extending tangentially in opposed direction from said tubular segment along the length dimension thereof, said wing elements each having a notch formed therethrough, the inwardly extending lateral edges defining one of said notches being downwardly and outwardly chamfered and inwardly directed at a predetermined angle toward one another;

(b) bearing means disposed in said tubular segment; and

(c) an axle member journaled for rotation in said bearing means, said axle member having a threaded end portion extending outwardly from said tubular segment when said axle member is journaled in said bearing means.

4,622,864

MODULAR CRANK SUBASSEMBLY AND BUILT-UP CRANKSHAFT THEREFOR

Mohamed A. Fetouh, Troy, Mich., assignor to General Motors Corp., Detroit, Mich.

Filed Jun. 3, 1985, Ser. No. 740,713

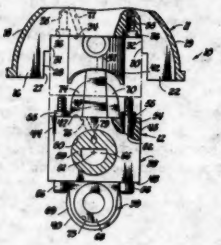
Int. Cl.[4] F16C *3/12, 3/14*

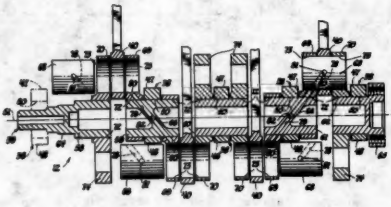
U.S. Cl. 74—597 **5 Claims**

1. A modular subassembly for installation as a unit into a piston machine, said subassembly including

a plurality of unitary crankshaft journal support members, each having a cylindrical journal opening, a mounting portion spaced from the opening and fastener receiving openings for securing said mounting portion against a mating portion of a cylinder block, said support members being longitudinally spaced with their journal openings aligned, and

a multipiece crankshaft supported by said support members, said crankshaft including a plurality of longitudinally spaced and axially aligned cylindrical journals received one in each of the journal openings of said support members, and at least one crank throw between and connecting with each adjacent pair of said journals,





said journals each having one end initially unconnected with an adjacent crank throw to permit installation of the unitary support members on their respective journals prior to final assembly of the multipiece crankshaft.

4,622,865

APPARATUS FOR CONTROLLING CONTINUOUSLY VARIABLE TRANSMISSION WHEN ACCELERATING FROM LOW SPEEDS

Hiroshi Itoh, and Mitsuru Takada, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

PCT No. PCT/JP84/00357, § 371 Date Nov. 15, 1984, § 102(e) Date Nov. 15, 1984

PCT Filed Jul. 11, 1984, Ser. No. 676,197

Claims priority, application Japan, Jul. 13, 1983, 58-126110

Int. Cl.[4] B60K *41/18, 41/12*

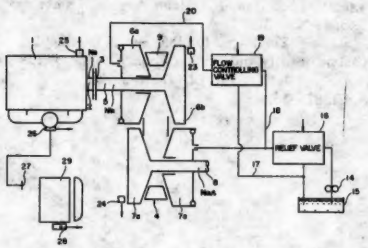
U.S. Cl. 74—866 **6 Claims**

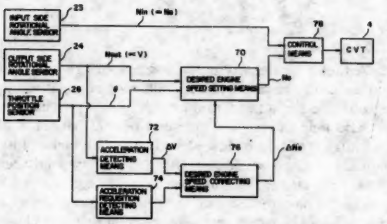
1. An apparatus for controlling a continuously variable transmission including a desired engine speed setting means (70) for setting the desired engine speed as a function of running parameter and a control means (78) for controlling a continuously variable transmission (4) such that an actual engine speed becomes a desired engine speed, comprising:

an acceleration requisition detecting means (74) for detecting the requisition of vehicle acceleration;

an acceleration detecting means (72) for detecting the vehicle acceleration; and

a speed ratio reducing means (76) for reducing the speed ratio of the continuously variable transmission when the





vehicle acceleration is small while the vehicle acceleration is demanded.

4,622,866

TRANSMISSION AND TRANSMISSION CONTROL DEVICE FOR PROVIDING DOWNSHIFTING

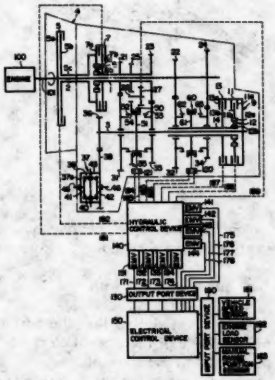
Hiroshi Ito; Shigemichi Yamada, and Teruo Akashi, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 469,697, Feb. 25, 1983. This application Oct. 4, 1985, Ser. No. 783,271

Claims priority, application Japan, Feb. 27, 1982, 57-31608

Int. Cl.[4] B60K *41/06*

U.S. Cl. 74—866 **4 Claims**



1. A transmission for a vehicle, comprising a transmission mechanism, and an automatic control device;

said transmission mechanism comprising: an input shaft; an output shaft, a first on-off clutch; a second on-off clutch; a first one way clutch; a second one way clutch; a first gear train having a first reduction gear ratio; a second gear train having a second reduction gear ratio smaller than said first reduction gear ratio; a third gear train having a third reduction gear ratio smaller than said second reduction gear ratio; a fourth gear train having a fourth reduction gear ratio smaller than said third reduction gear ratio; a first synchronizer which connects said input shaft and said output shaft via a series connection of said first on-off clutch, said first one way clutch, and said first gear train when said first synchronizer is shifted to a first side of a neutral position thereof so as to transmit rotational power from said input shaft to said output shaft in a normal rotational direction at a first speed stage and which connects said input shaft and said output shaft via series connection of said first on-off clutch, said first one way clutch, and said third gear train when said first synchronizer is shifted to a second side of said neutral position so as to transmit rotational power from said input shaft to said output shaft in said normal rotational direction at a third speed stage; and a second synchronizer which connects said input shaft and said output shaft via a series connection of said second on-off clutch, said second one way clutch, and said second gear train when said second synchronizer is shifted to a first side of a neutral position thereof so as to transmit rotational power from said input shaft to said output shaft in said normal rotational direction at a second speed stage and which connects said input shaft and output shaft via a series connection of said second on-off clutch, said second one way clutch, and said fourth gear train when said second synchronizer is shifted to a second side of said neutral position of said second synchronizer so as to transmit rotational power from said input shaft to said output shaft in said normal rotational direction at a fourth speed stage;

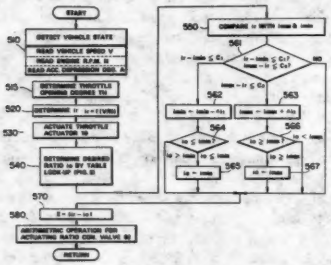
said automatic control device comprising: a vehicle speed sensor, an engine load sensor, a manual range position sensor, an electrical control device, a hydraulic control device including a plurality of electromagnetic fluid switching valves for controlling engagement and disengagement of said first and second on-off clutches and shifting of said first and second synchronizers between said respective first and second sides of said respective neutral positions, said electrical control device receiving input signals with respect to vehicle speed, engine load and manual range position from said vehicle speed sensor, said engine load sensor and said manual range position sensor, respectively, calculating shift stages to be accomplished at each predetermined moment in operation of said transmission based upon said three input signals, and dispatching output electrical signals to selected one or more of said plurality of electromagnetic fluid switching valve according to the results of said calculation, so as to accomplish said shift stages to be accomplished at each predetermined moment, said automatic control device shifting said transmission mechanism up from operation at said third speed stage to operation at said fourth speed stage by firstly disengaging said second on-off clutch, secondly shifting said second synchronizer to said second side of said neutral position thereof, and thirdly reengaging said second on-off clutch with said first on-off clutch being kept as engaged and with said first synchronizer being also kept as shifted to said second side of said neutral position thereof; and shifting said transmission mechanism down from operation at said fourth speed stage to operation at said third speed stage by firstly disengaging said second on-off clutch, and secondly shifting said second synchronizer to said first side of said neutral position thereof.

4,622,867

METHOD OF CONTROLLING RATIO CHANGE IN CONTINUOUSLY VARIABLE TRANSMISSION

Tetsuji Nishioka, Fujisawa, and Katsunori Oshiage, Yokosuka, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 9, 1984, Ser. No. 587,902
Claims priority, application Japan, Mar. 14, 1983, 58-40807
Int. Cl.[4] B60K *41/12*
U.S. Cl. 74—866 4 Claims



1. A method of controlling a reduction ratio in a continuously variable transmission of a vehicle, the vehicle including an engine drivingly connected to the continuously variable transmission and having a throttle which opens in degrees, and a control unit having a memory device,

the method comprising the steps of:

storing a ratio change allowable range in the memory device having a maximum reduction ratio and a minimum reduction ratio;

preparing data containing various reduction ratios including reduction ratios falling outside of said ratio change allowable range;

determining a desired reduction ratio from said data and generating a desired reduction ratio indicative signal;

determining an actual reduction ratio in the continuously variable transmission and generating an actual reduction ratio indicative signal;

comparing said actual reduction ratio indicative signal with said ratio change allowable range stored in the memory device and generating a comparison result indicative signal when said actual reduction ratio indicative signal satisfies a predetermined relationship with one of said predetermined maximum reduction ratio and said predetermined minimum reduction ratio;

extending said ratio change allowable range to a new ratio change allowable range in response to said comparison result indicative signal and storing said new reduction ratio change allowable range in the memory device, said new ratio change allowable range having a maximum reduction ratio and a minimum reduction ratio;

comparing said desired reduction ratio indicative signal with said new ratio change allowable range;

determining an actually available desired reduction ratio falling in said new ratio change allowable range in response to the result of comparing said desired reduction ratio indicative signal with said new ratio change allowable range and generating an actually available desired reduction ratio indicative signal; and

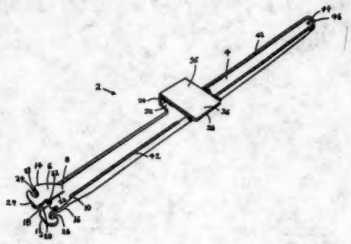
carrying out the ratio change in the continuously variable transmission in response to said actual reduction ratio indicative signal and said actually available desired reduction ratio indicative signal.

4,622,868

TOOL USED TO MANUALLY LOCK AND UNLOCK A PASSENGER DOOR OF A MOTOR VEHICLE

Bryan W. Flannigan, 163 Hahn Avenue, Cambridge, Ontario, Canada N3C 3B2

Filed Apr. 1, 1985, Ser. No. 718,492
Claims priority, application Canada, Apr. 11, 1984, 451777
Int. Cl.[4] B25B *33/00*
U.S. Cl. 81—15.9 8 Claims



1. A tool for manually unlocking a door of a motor vehicle from an inside of said vehicle, said tool comprising an elongated handle and a head, said head having a top, base and two sides and being located at one end of said handle, said head being affixed to said handle at said base, said channel having a longitudinal cross-section in the form of two adjacent and overlapping circles, an outer circle and an inner circle, said outer circle having a slightly larger diameter than said inner circle, with a U-shaped channel located at one side of said head and a hook located at the other side of said head,

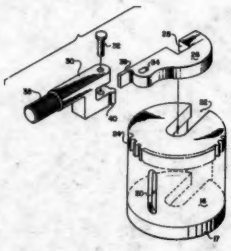
a slit that is symmetrical and said symmetrical channel extends through said head from said inner circle towards said base so that said symmetrical channel can expand slightly when pressured.

4,622,869

SUCKER ROD RATCHET WRENCH

Kenneth W. Lee, 2729 Halifax, Odessa, Tex. 79762

Filed Sep. 16, 1985, Ser. No. 776,648
Int. Cl.[4] B25B *13/46*
U.S. Cl. 81—52 4 Claims



1. A tool for connecting and disconnecting two elongated coaxial elements threaded together along their axes comprising:

a. a ratchet wheel on and coaxial with

b. a barrel,

c. the barrel having a rod slot so that the barrel may be placed coaxially on one of the coaxial elements with the ratchet wheel coaxial to the elements,

d. barrel jaw means for attaching the barrel to the coaxial elements upon which it is placed,

e. a wrench with wrench jaw means for attaching the wrench to the other of the coaxial elements,

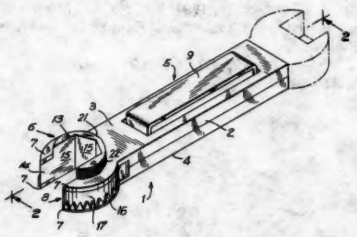
f. an elongated torque handle extendably radially of the wrench,
g. a pawl on the handle engaging the ratchet wheel, and
h. a removable pin extending through at least one hole in
i. a pivoted end of said torque handle,
j. said pin also extending through
k. a radially extending slot in the end of the wrench fitting at the joint to the torque handle, thus forming
l. pivot means innerconnecting the wrench and handle for pivoting the handle to the wrench so that the pawl may engage and disengage the ratchet wheel upon movement of the handle within the radially extending slot.

4,622,870

OPEN-END RATCHET-LIKE WRENCH WITH RELEASABLE LOCKING HEAD

Gerald Shirley, 133 Sagamore Rd., Tuckahoe, N.Y. 10707

Filed May 23, 1985, Ser. No. 737,275
Int. Cl.[4] B25B *13/00*
U.S. Cl. 81—58.2 **7 Claims**



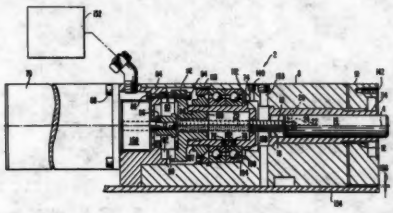
1. An open-end wrench comprising a hollow handle, a head having an opening end connected to said handle at one end thereof which head comprises a pair of jaws formed by upper and lower jaw plates defining an opening there-between, a socket member rotatably carried within said head for rotation in two opposite directions, said socket member formed by a generally cylindrical body being opened at both ends thereof, being supported within said opening for rotation between said jaw plates and having a section of its cylindrical wall open to coincide with the open-end of said head, said socket member comprising a main hub for engaging said jaw plates and for preventing axial movement of said socket member with respect to said head and having means for engaging a workpiece, and manually operable means carried by said handle for selectively engaging said socket member when said handle is normally gripped in the hand of a user to prevent rotation of said socket member within said head, said manually operable means comprising a spring-loaded coupler movable between an inoperative position and an operative position, said coupler extending through an opening in said handle when in the inoperative position and arranged to be depressed against the action of said spring loading into said operative position when said handle is gripped by a user, socket member engaging means carried by said coupler for engaged said socket member, engaging means carried by said socket member when said coupler is depressed into said operative position within said handle to thereby prevent rotational movement of said socket member within said head.

4,622,871

CUTTING TOOL COMPENSATOR FOR STATIONARY MACHINE TOOL

Richard G. Van Sickle, Sterling Heights, and Gerald W. Mathie, Holly, both of Mich., assignors to GTE Valeron Corporation, Troy, Mich.

Filed Dec. 31, 1984, Ser. No. 687,688
Int. Cl.[4] B23B *3/26*
U.S. Cl. 82—1.2 **20 Claims**



1. A machine tool holder circumscribing a longitudinal axis of rotation and adapted for having coupled thereto at least one cutting tool which is adjustable radially of said axis, said machine tool being of the type wherein said at least one cutting tool cuts a rotating workpiece and comprising:
a housing circumscribing said axis;
a block member having a cavity therein, circumscribing said axis and being coupled to said housing for radial movement relative to said axis, said block member being adapted for having coupled thereto said at least one cutting tool;
a drawbar which extends along said axis and is reciprocatably mounted within said housing and said cavity;
a roller screw mounted within said housing, said screw including a leadscrew spindle extending along said axis and at least one nut body operatively coupled thereto;
means coupling said drawbar to said leadscrew spindle for reciprocating said drawbar along said axis when said leadscrew spindle moves along said axis;
means operatively coupling said drawbar and said block member for causing said radial movement of said block member when said leadscrew spindle moves along said axis; and,
means coupled to said at least one nut body for controllably rotating said at least one nut body to allow for the selective longitudinal movement along said axis of said leadscrew spindle and drawbar coupled thereto so that fine adjustments can be made in radially positioning said block member during a cutting operation.

4,622,872

LATHE

Chihiro Ito, Gifu, Japan, assignor to Murata Kikai Kabushiki Kaisha, Japan

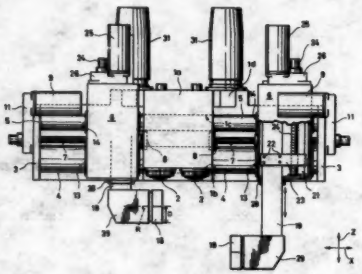
Filed Jun. 6, 1984, Ser. No. 617,758
Claims priority, application Japan, Jun. 8, 1983, 58-88295[U]; Jun. 8, 1983, 58-88296[U]; Jun. 8, 1983, 58-88297[U]; Jun. 14, 1983, 58-91767[U]
Int. Cl.[4] B23B *3/06, 9/10*
U.S. Cl. 82—2 R **6 Claims**

6. A lathe comprising a lathe bed in which a head stock for receiving at least one main shaft is located at a central portion of said lathe bed, said head stock having two bores provided below said main shaft, said lathe further having supporting members fixed at left and right sides of said lathe bed, respectively, said lathe further having two cylindrical guide shafts, aligned in parallel along a horizontal plane, said guide shafts extending from one of said sides of said lathe through said bores to the other said side of said lathe;

said cylindrical guide shafts having end portions affixed to said supporting members;

said lathe further having an adjusting means for simultaneously and precisely aligning said cylindrical guide shafts affixed to said supporting members;

said lathe further having cross slides, said cross slides being located at said left and right sides of said lathe respectively, between said head stock and said supporting members, said cross slides being slideable laterally with respect to said main shaft along said precisely aligned guide shafts;



said cross slides having both a cylindrical guide shaft and a slide shaft which are both in parallel, said guide shaft and slide shaft crossing at a right angle with said precisely aligned guide shafts;

said slide shaft being moveable longitudinally with respect to said main shaft, said slide shaft having a tool rest fixed at an extremity end.

4,622,873

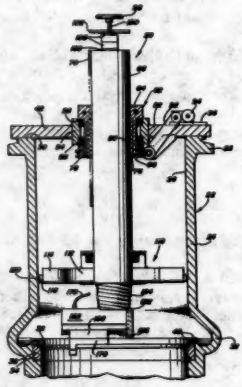
SEMI-AUTOMATIC VALVE TOOL

Stanley P. Przybylski, Sr., Lanoka Harbor, N.J., assignor to PPT, Inc., Forked River, N.J.

Filed Jun. 18, 1985, Ser. No. 746,189

Int. Cl.[4] B23B *5/06*

U.S. Cl. 82—4 R **7 Claims**



1. An apparatus for performing work operations on interior surface areas of an open-ended tubular work piece comprising a support plate adapted to be mounted on the open end of the work piece, an elongated tubular member supported centrally of the support plate and extending through the support plate, means supporting the tubular member from the plate for axial movment of the tubular member, means interconnecting the support plate and tubular member for rotating the tubular member about its longitudinal axis in substantially perpendicular relation to the support plate, a support spider rotatably mounted on the end of the tubular member inserted into the tubular work piece with the support spider including a plurality of radial supporting arms, a radially moveably supported centering member on each spider arm with the outer ends of the centering members engaging the interior surface areas of the work piece to stabilize and support the inner end of the tubular member and centering the tubular member in relation to the work piece, a tool adapter, slide and slide feed vertically movably supported from the inner end of the tubular member with the tool adapter including means to support a tool to perform a work operation, means operable from the end of the tubular member remote from the tool adapter to actuate the tool slide feed to move the tool adapter and tool supported thereon laterally of the work piece to engage the tool with an interior surface area of the work piece for performing a work operation when the tubular member is rotated, and means at the end of the tubular member remote from the tool adapter to provide a fine axial adjustment of the tool adapter to adjust the tool axially of the interior surface areas of the work piece.

4,622,874

MEANS FOR ATTACHING A TOOL RECEIVING SLEEVE TO A CONCAVE SLIDE OF A MACHINE TOOL

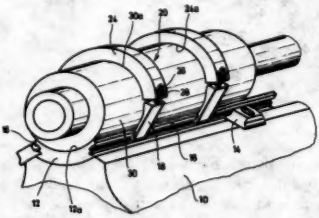
Günther Trautmann, Kirchheim-Nabern, Fed. Rep. of Germany, assignor to Index-Werke Komm.-Ges. Hahn & Tessky, Fed. Rep. of Germany

Filed Oct. 18, 1984, Ser. No. 662,040

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1983, 3340102

Int. Cl.[4] B23B *21/00, 29/00*

U.S. Cl. 82—24 R **8 Claims**



1. A clamping mechanism for mounting a tool holder sleeve having a cylindrical outer contour to a machine tool having a bed, said clamping mechanism comprising a slide mounted for sliding movement on the bed and having a concave surface for supporting the cylindrical outer contour of the tool holder sleeve, means for securing the slide on the bed, and a clamp assembly including a clamping bracket circumferentially spanning the tool holder sleeve, means for detachably securing the clamping bracket to the slide, and threaded means for tightening the clamping bracket around the tool holder sleeve.

4,622,875

SYSTEM AND PROCESS FOR SORTING AND OPENING PACKAGES

Clayton N. Emery, Middletown, and Howard M. Harper, Louisville, both of Ky., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Mar. 23, 1984, Ser. No. 593,004

Int. Cl.[4] B26D *7/06;* **B26F** *3/00;* **B07C** *5/34*

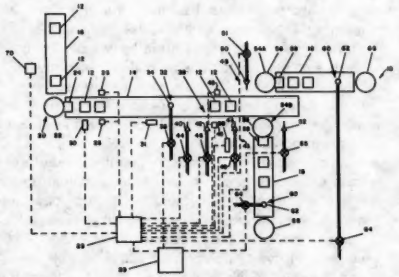
U.S. Cl. 83—80 **13 Claims**

1. A system for sorting packages, comprising: means for conveying the packages to be sorted;

Universal Product Code reading means located at a prese-

lected location at the conveyor means for reading the Universal Product Code on each of the packages being conveyed on the conveyor means;

processor means operatively associated with the Universal Product Code reading means for receiving the signal representing the Universal Product Code from the reading means and comparing the Universal Product Code with stored information related to the Universal Product Code;



first ejector means operatively associated with the processor means for ejecting packages not identified by the processor means from the conveyor means; and,

detection means located at the conveyor means downstream of the first ejector means for determining if a package selected for ejection by the first ejector means was in fact ejected from the conveyor means.

4,622,876

CUTTING DEVICE FOR CRESTED CUTTING OF FRUITS AND THE LIKE

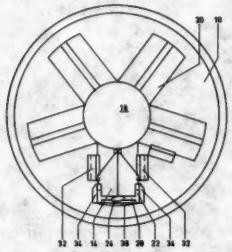
Reinhard Napierski, Talstrasse 18, 6361 Niddatal 1, Fed. Rep. of Germany

Filed Apr. 29, 1985, Ser. No. 728,222

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1984, 3415691

Int. Cl.[4] B26D *5/16*

U.S. Cl. 83—618 **11 Claims**



1. A cutting device for the crested cutting of fruits and the like comprising:

a fruit holder;

a plurality of knives arranged radially in a star arrangement around said fruit holder, each said knife having a V-shaped cross section and a cutting blade;

a first housing part including gable-roof-shaped guide surfaces on which corresponding said knives are slidingly guided for radial movement;

a second housing part which is rotatable relative to said first housing part;

a radial moving means for moving said knives radially along respective said guide surfaces by relative rotation of said first housing part and said second housing part including a catch arranged on each said knife and respective spiral grooves in said second housing part meshing with a respective said catch; and

at least one guide countersurface for each said knife provided on one of said first housing part and said second housing part on which corresponding said knives are slidingly guided for radial movement such that said knives are constrained for radial movement only by said guide surfaces and countersurfaces.

4,622,877

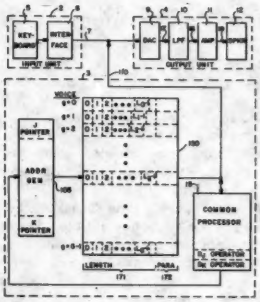
INDEPENDENTLY CONTROLLED WAVETABLE-MODIFICATION INSTRUMENT AND METHOD FOR GENERATING MUSICAL SOUND

Alexander R. Strong, Willington, Conn., assignor to The Board of Trustees of the Leland Stanford Junior University, Palo Alto, Calif.

Filed Jun. 11, 1985, Ser. No. 743,563

Int. Cl.[4] G10H *1/00*

U.S. Cl. 84—1.01 **66 Claims**



4. A musical instrument comprising,

input means for specifying music to be generated,

wavetable generator means for generating digital samples of music, said generator means including,

wavetable means for storing a plurality of samples in wavetable locations,

sample generator means including modifier means for modifying one or more of said samples to provide a first sample,

first means for pointing to a first one of said wavetable locations to store said first sample, said first means including a first pointer, K_t, for pointing to said first one of said locations,

second means for pointing to a second one of said wavetable locations to provide a second sample as an audio output signal, said second means including a second pointer, J_t, for pointing to said second one of said wavetable locations,

operator means for periodically modifying said first pointer with a first operator and for periodically modifying said second pointer with a second operator whereby said first and second pointers are independently changeable, said operator means including common operator means for generating said first and second operators as D_X^*, said common operator means including means for randomly generating a number, $(u_X)_t$, uniformly distributed in the range 0 to R_X, where R_X is some number with absolute value less than or equal to one, and said common operator means including means for generating a non-random number, $(v_X)_t$, as a fraction between 1 and 0 or 0 and -1 whereby $D_X=(u_X)_t+(v_X)_t$ and the operation of D_X^* upon X is described as follows:

$$X_t = D_X^*(X_{t-1}) = X_{t-1} + (u_X)_{t-1} + (v_X)_{t-1}$$

and wherein said common operator means includes means for letting X equal to K for said first operator and equal to J for said second operator,

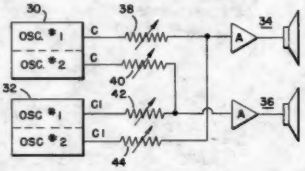
access means operating independently in response to said first means and said second means to access said wavetable locations whereby the access for said first sample is made independently of the access for said second sample.

4,622,878

STEREOPHONIC SYSTEM FOR ELECTRONIC ORGANS

Paul H. Sharp, Fullerton, Calif., assignor to CBS Inc., New York, N.Y.

Filed Apr. 18, 1985, Ser. No. 724,441
Int. Cl.[4] G10H *1/02, 7/00*; H04R *5/00*
U.S. Cl. 84—1.24 **9 Claims**



1. An electronic organ system for producing a stereophonic sound image comprising:

tone generating means for producing for each note in a musical range extending throughout several octaves two electrical tone signals which have substantially the same harmonic structure and both having a frequency corresponding to the frequency of the said each note and which are time-displaced relative to each other,

first and second electrical signal channels each including a respective loudspeaker for converting electrical signals to sound signals, and

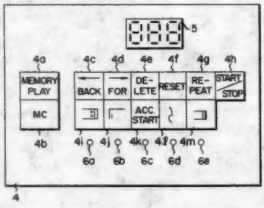
means for coupling one of the said two signals for said each note to one of said signal channels and means for coupling the other of the said two signals for said each note to the other of said signal channels.

4,622,879

ELECTRONIC MUSICAL INSTRUMENT

Akinori Matsubara, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 433,429, Oct. 8, 1982. This application Mar. 11, 1985, Ser. No. 709,984
Claims priority, application Japan, Oct. 12, 1981, 56-162945
Int. Cl.[4] G10F *1/00*
U.S. Cl. 84—1.03 **6 Claims**



1. An electronic musical instrument comprising:

means for sequentially inputting a series of tone data corresponding to a pre-selected musical piece;

memory means, including a number of memory positions, each having a corresponding address, for storing sequentially in a plurality of said memory positions the tone data inputted from said inputting means;

address designation renewing means, for designating and modifying an address indicating where said tone data have been stored in said memory means, said address designation renewing means comprising:

manually operable first means, for incrementing, in response to a manual operation, the designation address of the data-containing memory positions of said memory means; and

manually operable second means, for continuously decrementing, in response to successive manual operations, a plurality of the designation addresses of the data-containing memory positions of said memory means;

tone generator means for generating a tone corresponding to the tone data stored in a memory position, the address of which has been modified by said address designation renewing means;

manually operable delete means coupled to said memory means, for deleting, in response to a manual operation, tone data stored in a memory position of said memory means, the address of which position is designated by said address designation renewing means; and

means responsive to deletion by said delete means of said tone data stored in said designated address for automatically causing said tone generator means to generate a tone corresponding to the tone data in a memory position address which differs by one from said designated address.

4,622,880

CHORDING APPARATUS FOR STRINGED MUSICAL INSTRUMENT

Marvin R. Glemming, 4900 Yorktown La., Plymouth, Minn. 55442, and Walter I. Bieger, St. Paul, Minn., assignors to Marvin R. Glemmings, Plymouth, Minn.

Filed Sep. 20, 1984, Ser. No. 652,872
Int. Cl.[4] G10D *3/08*
U.S. Cl. 84—317 **8 Claims**

1. A chording apparatus for a musical instrument having a plurality of strings extending along a keyboard, comprising

means for manually selecting a chord to be played;

a plurality of individual string depressing means shiftable between string clearing and string depressing positions, each of said individual depressing means being operably engageable with predetermined ones of said strings when in said string depressing position;

actuating means responsive to said chord selecting means for shifting predetermined ones of said depressing means to said string depressing positions, at least some of said string depressing means being shiftable by more than one of said actuating means whereby said individual depressing means can be used in multiple chord combinations; and

a biasing plate having a plurality of resilient biasing elements integrally molded as part of said plate, each biasing ele-

ment being operably coupled with a respective one of said string depressing means for urging said respective string depressing means to said string clearing position.

4,622,881

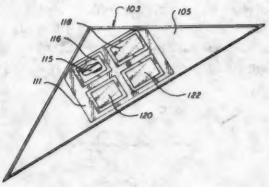
VISUAL DISPLAY SYSTEM WITH TRIANGULAR CELLS

Michael Rand, 1005 Whiteoak Dr., San Jose, Calif. 95129

Filed Dec. 6, 1984, Ser. No. 679,064

Int. Cl.[4] A63J *17/00*; H04M *1/22*

U.S. Cl. 84—464 R **14 Claims**



1. In a visual display unit for producing aesthetically pleasing lighting effects, said display unit incorporating a diffusing surface and opaque light baffling means substantially perpendicular to that surface to produce a plurality of compartments of substantially similar shape, each such compartment containing at least three discrete light sources, each such light source adapted to produce a different color and separately controllable in intensity, the improvement comprising said light baffling means define compartments forming isoceles triangles having adjacent hypotenuses.

4,622,882

VALVE DEVICE FOR VACUUM BRAKE BOOSTERS

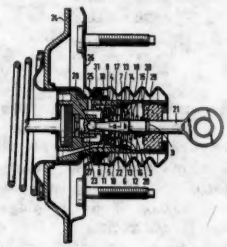
Gilbert Bischoff; Reiner Müller, both of Hattersheim, and Dietmar Gath, Braunfels, all of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Jun. 22, 1984, Ser. No. 623,391

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1983, 3322980

Int. Cl.[4] F15B *9/10*

U.S. Cl. 91—369 R **4 Claims**



4. A valve device for use in a vacuum brake booster of the type having a movable wall operatively connected to a master cylinder and to a control valve device provided in a bore of a control housing for controlling pressure across said movable wall, said valve device including a flexible valve cone having an outer annular bead at one end and a radially inwardly extending valve flange at an end opposite said one end a control piston co-axially aligned with said bore having one end thereof adjacent said valve flange defining a first valve seat, a second valve seat provided on a radially inwardly extending annular shoulder formed in the bore of the control housing disposed radially outwardly from said control piston and being adjacent said valve flange, a piston rod operatively connected at one end thereof to brake actuation means for movement between a brake released position and a fully braked position, said piston rod extending co-axially through said bore, said piston rod having a second end connected to said valve piston, a support ring co-axially mounted in said bore including a cylindrical collar having an outwardly bent edge, said annular bead in sealing engagement between a shoulder on said control housing within said bore and said edge, said support ring further including a radially, inwardly extending flange and a cylindrical tubular section extending co-axially in said bore from said support ring flange having an end thereof adjacent an annular surface on said valve cone flange, a piston rod return spring having one end thereof abutting said radially inwardly extending flange of said support ring and a second end thereof operatively connected to said piston rod, a valve spring around said piston rod co-axially aligned with said bore and said first and second valve seats having one end thereof against said annular surface of said cone flange and a second end thereof operatively connected to said piston rod, said valve spring including a cylindrical portion along portion of its length substantially equal to the length of said tubular section of said support ring, said cylindrical protion of said spring having an outer diameter and said tubular section having an inner diameter, said outer and said inner diameters providing for restraint of the cylindrical portion of said spring against radial movement under the influence of a transverse force imposed thereon.

4,622,883

APPARATUS FOR POSITIONING A MOVABLE MEMBER

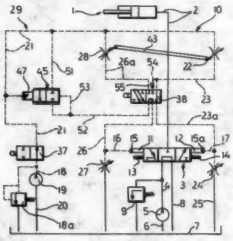
Norbert Mucheyer, Rechtenbach, Fed. Rep. of Germany, assignor to Mannesmann-Rexroth GmbH, Lohr am Main, Fed. Rep. of Germany

Filed Jan. 21, 1986, Ser. No. 820,680

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1985, 3505275

Int. Cl.[4] F15B *13/042*

U.S. Cl. 91—388 **5 Claims**



1. An apparatus for controlling the position of a positionable member in response to a command signal and an actual value signal comprising the combination of

bidirectionally operable multi-way valve means for controlling the flow of fluid under pressure from a source of fluid under pressure to the positionable member, said valve means including first and second pressure-responsive control devices for actuating said valve means;

an adjustable first choke having one side connected to said first control device;

an adjustable second choke;

an adjustable third choke connected to said second control device, said first and third chokes being actual value transmitters;

an adjustable fourth choke coupled to said second choke so that said second and fourth chokes are concurrently adjustable in opposite directions, said second and fourth chokes being connectable to said source;

a fifth choke;

an externally leak-proof proportioning pressure valve connectable to said source; and

a selectively movable switching valve having a plurality of ports, said ports being respectively connected to each of said chokes and said proportioning valve, said switching valve being selectively movable to either of two positions comprising

a first position in which said first and second chokes are connected in series with said first control device being connected to the junction therebetween, and said proportioning valve is connected to said second control device and said third choke, and

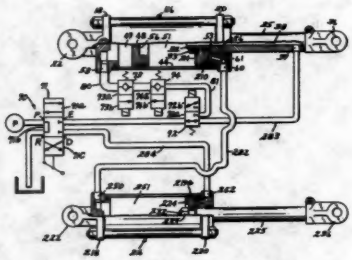
a second position in which said first and second chokes are connected in series with said fifth choke and with each other with said first control device being connected to the junction between said first and second chokes, and said third and fourth chokes are connected in series with each other with said second control device being connected to the junction therebetween, with said proportioning valve being disconnected from said control devices.

4,622,884

FLOATING PISTON DEPTH CONTROL APPARATUS

Andrew F. Buchl, 401 9th Ave. SW., Rugby, N. Dak. 58368

Division of Ser. No. 253,014, Apr. 10, 1981, Pat. No. 4,423,664.
This application Dec. 27, 1983, Ser. No. 565,356
The portion of the term of this patent subsequent to Jan. 3, 2001, has been disclaimed.
Int. Cl.[4] F15B *11/08*
U.S. Cl. 91—445 1 Claim



1. A hydraulic system comprising:

(a) a main cylinder having first and second ends, a main piston, a floating piston, a first region defined by the space between said floating piston and said first end, a second region defined by the space between said floating piston and said main piston, a third region defined by the space between said main piston and said second end;

said main piston including a stem extending outside said cylinder for transmission of fluid into and out of said second region;

said first and second ends including apertures for transmission of fluid into and out of said first and third regions, respectively;

(b) circuit means including a pair of selectively disableable one-way check valves oppositely oriented with respect to the direction of fluid flow checked so that when both of said check valves are in the check position the flow of fluid into and out of said first aperture is positively prevented;

valve means for controlling the flow of fluid to said second aperture, said stem and said check valves;

(c) means for controlling said valve means and check valves to provide:

(1) a first position thereof which disables said check valves and permits the flow of fluid into said first aperture, out of said second aperture, whereby said main and floating pistons are caused to move toward said second end,

(2) a second position thereof which disables said check valves and permits the flow of fluid out of said first aperture, into said second aperture, whereby said main and floating pistons are caused to move toward said first end,

(3) a third position thereof which allows the flow of fluid into said stem, out of said second aperture whereby said main piston is caused to move away from said floating piston, and

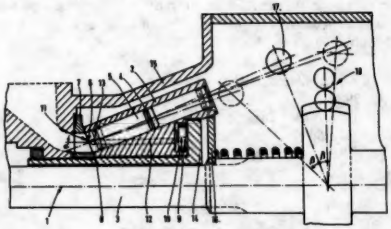
(4) a fourth position thereof which allows the flow of fluid into said second aperture, out of said stem aperture, whereby said main piston is caused to move toward said floating piston.

4,622,885

HYDROSTATIC PISTON PUMP OR ENGINE HAVING DIAGONAL PISTON AXIS

Sven Schriwer, Trädgardsgatan 36, S-461 42 Trollhättan, Sweden

PCT No. PCT/SE85/00039, § 371 Date Sep. 23, 1985, § 102(e) Date Sep. 23, 1985, PCT Pub. No. WO85/03554, PCT Pub. Date Aug. 15, 1985
PCT Filed Jan. 29, 1985, Ser. No. 783,929
Claims priority, application Sweden, Jan. 31, 1984, 8400473
Int. Cl.[4] F01B *13/04*
U.S. Cl. 91—487 6 Claims



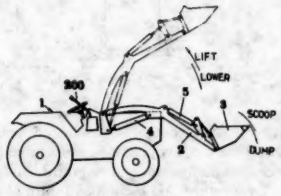
1. A piston machine comprising a plurality of diagonally working pistons spread along the circumference of the same, and which being received in cylinder bores sloping in an angle (α) from the axis of symmetry and a valve plate of the machine and a number of hydrostatic bearings arranged to work between two relative to each other rotating machine parts, with the said cylinder bores received of one of said parts characterized by a plurality of hydrostatic bearings, which number corresponds to the number of pistons, and with respective bearing connected and arranged to work with a belonging cylinder bore, are arranged in a circle around the said axis of rotation sliding up against a stationary force- absorbing part, which is rigidly connected to a housing of the said diagonal piston machine, at approximately the same radial distance from the said axis of rotation of the machine as does the center of force on the effective surface on the contact surface between the valve plate and the cylinder casing, and thereby aimed to co-operate in pairs with a bearing for each cylinder bore that the sum of the forces and the directions of force of the pistons and the hydrostatic bearings approximately correspond to the hydrostatic force and the direction of force at the contact surface between the cylinder casing and the valve plate.

4,622,886

HYDRAULIC CONTROL CIRCUIT SYSTEM

Yusuke Imada; Isamu Hiroe; Tomoyuki Higuchi; Seiichi Kato, and Masahiro Tanino, all of c/o Sanyo Kiki Kabushiki Kaisha, No. 14-1, all of Ikejiri Aza Ishinoki, Itami-shi, Hyogo-ken, Japan

Filed Aug. 28, 1980, Ser. No. 182,073
The portion of the term of this patent subsequent to Oct. 18, 2000, has been disclaimed.
Int. Cl.[3] F15B 11/16
U.S. Cl. 91—520 3 Claims



1. A hydraulic control system for controlling the rod advancing and retracting actions of fist and second double-acting cylinders each having a piston movable therein with its piston-rod extending through an end of the cylinder, said piston dividing the interior of the cylinder into a piston-side chamber and a rod-side chamber, said control system comprising a hydraulic pump for supplying said double-acting cylinders with pressure oil, directional control valves respectively associated with said cylinders for controlling the supply of pressure oil to said cylinders, first circuit means for independently operating said cylinders, and second circuit means for causing the rod advancing and retracting actions of said first cylinder to be operatively associated with the rod advancing and retracting actions of said second cylinder said second circuit means comprising a first oil passage for feeding oil from the rod-side chamber of said first cylinder to the piston-side chamber of said second cylinder when the rod of said first cylinder is being advanced, a second oil passage having a restrictor for returning oil from the rod-side chamber of said second cylinder to a tank during said rod advancing operation, a third oil passage for feeding oil from the piston-side chamber of said first cylinder to the rod-side chamber of said second cylinder when the rod of said first cylinder is being retracted, a fourth oil passage having a restrictor and branching off from said third oil passage and leading to a tank, and a fifth oil passage for returning oil from the piston-side chamber of said second cylinder to the tank, said system including a speedup device which increases the rod advancing speed of said second cylinder by transferring oil from the rod-side chamber of said second cylinder to the piston-side chamber of said second cylinder.

4,622,887

VENTILATION APPARATUS AND METHODS OF MAKING AND USING SAME

James R. Peterson, Westland, Mich., assignor to Jimco Products, Inc., Livonia, Mich.

Continuation of Ser. No. 176,608, Aug. 8, 1980, abandoned, which is a continuation of Ser. No. 638,030, Dec. 5, 1975, abandoned. This application Oct. 28, 1985, Ser. No. 793,454
Int. Cl.[4] F23L 17/02
U.S. Cl. 98—66.1 2 Claims

1. A roof ventilation device, comprising:

a tubular member haing a base, a top, an upper portion spaced below said top, and at least one ventilation aperture in said tubular member; and

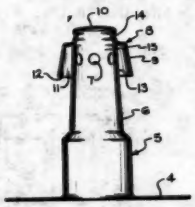
a one-piece cap disposed over said upper portion of said tubular member and covering said aperture, said cap including

(1) a circumferentially extending, generally vertical sidewall radially spaced from said tubular member, said sidewall defining an annular space between said sidewall and said upper portion of said tubular member,

(2) a topwall covering said top of said tubular member;

(3) a circumferential first band connecting said topwall with said sidewall, said first band being radially inset relative to said sidewalls;

said upper portion having a circumferential second band extending about the circumference of said upper portion,



said second band being the compliment of said first band and radially inset relative to said upper portion;

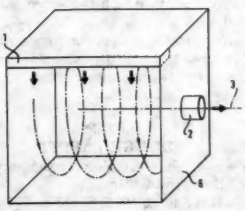
said first band conjugally interconnecting with said second band providing a tight, interference fit connection between said cap and said tubular member, wherein said conjugally interconnected first and second bands of said cap and said upper portion of said tubular member radially overlap each other.

4,622,888

HOODS FOR THE EXTRACTION OF GASES, VAPORS AND SUSPENDED MATERIAL

Wolf J. Denner; Andreas Biernacki, and Günter Breitschwerdt, all of Stuttgart, Fed. Rep. of Germany, assignors to Waldner Laboreinrichtungen, Fed. Rep. of Germany

Division of Ser. No. 471,817, Mar. 3, 1983, Pat. No. 4,550,650.
This application Mar. 18, 1985, Ser. No. 712,769
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1982, 3208622
Int. Cl.[4] B05B 15/12
U.S. Cl. 98—115.3 3 Claims



1. Hood for the extraction of gases, vapors, and suspended matter, particularly a laboratory hood, comprising a hood casing, a supply air feed device, at least one suction outlet, supply air being supplied at least partly from the ambient air through a connection from the hood casing to the external air, wherein the supply air feed device includes at least one nozzle ledge that is located within the hood and has a discharge outlet directed in the plane of a front suction inlet of the hood, and wherein each said suction outlet is located within said hood in association with a respective said nozzle ledge in a manner producing a vortex air flow therebetween in such a way that air is extracted by the suction outlet in the direction of axis of the vortex flow produced, characterized in that the suction outlet (2) is arranged on side walls of the hood casing (6) and

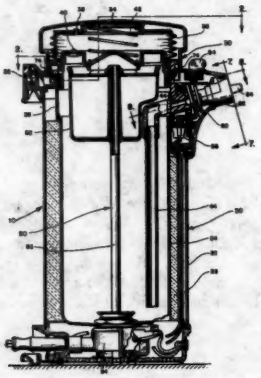
that the nozzle ledge (1) is arranged on at least one of the top and bottom of the front opening.

4,622,889

PERCOLATOR INCLUDING PUMP TYPE DISPENSER

William A. Chappell, Raytown; David T. Higgins, Lee's Summit; Michael D. Reynolds, and William J. Tweed, both of Kansas City, all of Mo., assignors to Rival Manufacturing Company, Kansas City, Mo.

Filed Dec. 10, 1985, Ser. No. 807,283
Int. Cl.[4] A47J 31/00
U.S. Cl. 99—312 23 Claims



1. In a percolator/dispenser of the type comprising a vessel comprising a lid, a percolator assembly inside the vessel, a spout extending between the interior and the exterior of the vessel, and a manually operated pump mounted to the vessel and operative to pump liquid out of the vessel through the spout, the improvement comprising:

a valve;

means for movably mounting the valve to the vessel such that the valve is movable between a vent position, in which the valve vents the interior of the vessel, a pump position, in which the valve directs liquid to the spout, and a sealed position, in which the valve seals the interior of the vessel; and

means, coupled to the valve, for preventing movement of the valve from the sealed position to the pump position when the vessel is pressurized excessively.

4,622,890

DOUGH LAPPER

Peter E. Swanson, Duluth, Minn., assignor to The Pillsbury Company, Minneapolis, Minn.

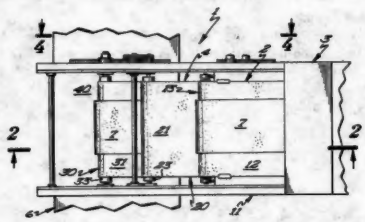
Filed Sep. 3, 1985, Ser. No. 771,549
Int. Cl.[4] A21C 9/04
U.S. Cl. 99—450.2 7 Claims

1. A dough web feeding device comprising:

(a) first conveying means including a first discharge end and a first belt movably mounted on said first conveying means, said first discharge end being nonreciprocating relative to the ground during operation of the dough web feeding device;

(b) second conveying means positioned beneath said first conveying means including a second discharge end and a second belt, separate from the first belt, movably mounted on said second conveying means, said second discharge end being movable relative to said first discharge end in reciprocating motion;

(c) third conveying means positioned beneath said second conveying means including a third discharge end and a third belt, separate from the first belt and second belt, movably mounted on said third conveying means, said third discharge end being movable relative to said first discharge end in reciprocating motion;



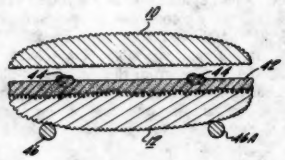
(d) first drive means operably associated with said first, second and third conveying means operable for effecting movement of said first, second and third belts and reciprocating movement of said second and third discharge ends relative to one another.

4,622,891

SANDWICH COOKIES, APPARATUS FOR MAKING SAME

Clarence W. Cramer, Burlington, and Roelof deVries, Haddonfield, both of N.J., assignors to Campbell Soup Company, Camden, N.J.

Filed Jan. 22, 1985, Ser. No. 693,135
Int. Cl.[4] A21C 9/04
U.S. Cl. 99—450.4 11 Claims



1. Apparatus for making a sandwich cookie comprising a first and a second cookie biscuit and a layer of edible filler between one side of said first cookie biscuit and one side of said second cookie biscuit, said apparatus comprising:

(a) coating means for forming a solid adhering coating of edible material on said one side of said first cookie biscuit, said coating having a non-adhesive exposed surface ineffective in itself to produce bonding to said second cookie biscuit;

(b) means for applying to a part only of at least one of said sides of said first and second biscuits a molten deposit of an edible material which solidifies when left at room temperature;

(c) means for urging said first and second biscuits against each other with said one sides of said cookie biscuits confronting each other and with said molten deposit and said coating between them, before said deposit has solidified; and

(d) means for thereafter causing said molten deposit to solidify in situ;

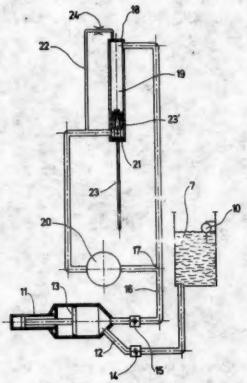
(e) said molten deposit having the property, when solidified, of bonding said biscuits to each other to form said sandwich cookie.

4,622,892

RETRACTILE NEEDLE MEAT PIECES INJECTING MACHINE

Narciso L. Corominas, Besalu, Spain, assignor to Metalquimia, S.A., San Ponc de la Barca, Gerona, Spain

Filed May 7, 1985, Ser. No. 731,460
Claims priority, application Spain, Jul. 5, 1984, 532268
Int. Cl.[4] A23B *4/00*
U.S. Cl. 99—533 4 Claims



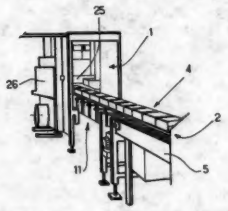
1. An apparatus for injecting meat pieces, comprising:
a plurality of injecting needles;
a means for supplying a fluid into said injecting needles, said fluid being injected by said injecting needles into meat being processed;
a means for supporting said plurality of injecting needles;
said means for supporting including a cylinder guiding a plunger, said plunger supporting one of said plurality of injecting needles;
said plunger having a bore therethrough for permitting passage of fluid from said cylinder into said injecting needle;
a means for moving said means for supporting in a reciprocal motion;
a fluid supply port disposed in said cylinder adjacent a position which represents a furthermost extent of travel of said plunger;
a second port disposed in said cylinder adjacent a position representing a furthermost retraction of said needle into said cylinder;
said first port being in fluid communication with said needle when said needle is at its furthermost extent from said cylinder;
said needle being biased by said plunger toward its furthermost extent from said cylinder;
said needle being forced into said cylinder during a downstroke of said means for supporting when said needle encounters a sufficiently hard portion of the meat;
a means for limiting internal pressure of fluid within said cylinder below a predetermined value, said predetermined value being sufficiently low to avoid violent motion of said needle from said cylinder when said means for supporting moves toward an upper position.

4,622,893

HIGH-SPEED AUTOMATIC HOOPING DEVICE

Pascal Magoni, Fegerheim; Bernard Jean-Pierre, Strasbourg, and Pascal De Guglielmo, Troyes, all of France, assignors to Brasseries Kronenbourg (S.A.), Strasbourg, France

Filed Jul. 25, 1985, Ser. No. 759,075
Claims priority, application France, Jul. 27, 1984, 84 12114
Int. Cl.[4] B65B *13/18*
U.S. Cl. 100—2 10 Claims



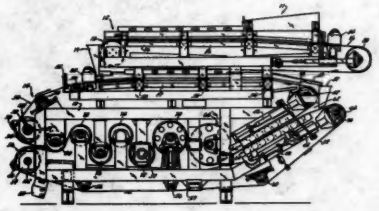
10. A method for continuous automatic horizontal hooping at high speed, characterized that a package is introduced from below into an arc of a hooping device on an ascending platform, that a holding trap is opened by the platform, that the package is emplaced for hooping by the platform, that the trap door is closed by external push means, that the package is supported by the trap, that the platform is lowered, that hooping is performed during the descent and loading of the platform, that a new package is supplied to the platform, that the trap door is opened by the ascending movement of the platform, and that when the upper face of the package appears on the support elements of the trap door, or below the bottom of the preceding package, that that preceding package is pushed upwardly across the trap door by the arriving package, that the new package is lifted above the plane of the trap door by the platform, that the trap door is closed, that the platform is made to descend to a lower position, that hooping is carried out during discharge of the previous package towards a discharge ramp by lateral disengagement from the pile with the aid of a pushing device, that simultaneously with the hooping operation the platform is loaded and thereafter made to ascent towards the trap door for a new operative cycle.

4,622,894

BELT PRESS LOAD BEARING MEASURING MEANS

Robert E. Crandall, Greendale; Kenneth F. Kosulic, Mukwonago; Thomas C. Rooney, Waukesha, and Larry C. Smith, New Berlin, all of Wis., assignors to Rexnord Inc., Brookfield, Wis.

Filed Dec. 11, 1984, Ser. No. 680,614
Int. Cl.[4] B30B *9/24*
U.S. Cl. 100—118 3 Claims



1. A belt press for dewatering a slurry, comprising:
a frame;
a pair of endless belts supported by rolls extending laterally of the belts and mounted within the frame, said belts being

formed into generally horizontally flattened loops disposed one directly above the other;

a dewatering zone comprising a series of laterally extending pressure exerting rolls also supported within the frame;

means for advancing the juxtaposed portions of the belts together with slurry sandwiched between them through the dewatering zone to effect a progressive dewatering of the slurry;

means associated with each of the belts for tensioning said belts, each of said belt tensioning means comprising a hydraulic cylinder connected between the frame and the roll engaging the respective belt, and a valve for alternatively connecting said cylinder to a preset actuating pressure source or a pressure release means;

means associated with each of said belts at the end of the dewatering zone for sensing the speed of said associated belt, each of said speed sensing means comprising a shaft encoder connected to one of the rolls engaging the respective belt;

means responsive to both of said belt speed sensing means and adapted to compare the differential in the speeds of the upper and lower belts against a predetermined limit and actuate one or the other of the belt tensioning means to synchronize the speeds of the two belts within the predetermined limit;

said belt tensioning means including belt tension sensing means provided with roll bearing load measuring means;

wherein said roll bearing load measuring means is comprised of:

a pillow block connected to the main shaft of a tensioning roll and containing the bearings for said shaft;

a base plate attached to the base of said pillow block;

said base plate attached at one end to a tensioning rod bearing support with a rigid spacer mounted therebetween;

said spacer creating a gap at the unattached end of said base plate which allows said base plate to deflect in response to increased belt tension;

plate deflection sensing means mounted in said gap; and

said tensioning rod bearing support attached to said hydraulic cylinder.

4,622,895

SWIVEL FRAME APPARATUS FOR LINING A WRAP-AROUND PLATE ABOUT A FORM CYLINDER

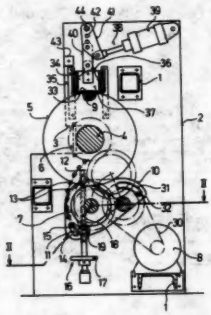
Joachim Dorow, Hassloch, and Gerhard Bleckmann, Lampertheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Sep. 19, 1985, Ser. No. 777,678

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1984, 3434670

Int. Cl.[4] B41F *9/00, 5/00*

U.S. Cl. 101—153 **13 Claims**



1. Apparatus for lining a removable form cylinder, in particular a form cylinder for gravure printing, with a wrap-around plate, comprising a machine frame having insertion apertures (3), provided in the area of its side walls (2) and allocated to the lateral bearing journals (4) of the form cylinder (5), and having a swivel frame (10) which is pivotably mounted outside the insertion apertures (3), can be fixed in every required pivotal position relative to the machine frame and accommodates a drivable pressing roller (7) mounted in rotatable eccentric bushes (21).

4,622,896

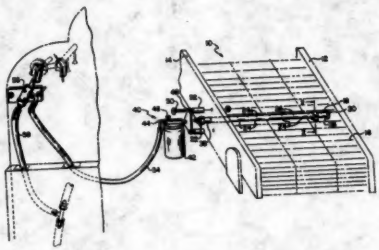
POWDER SPRAY GUN

William J. Laverick, Chula Vista, Calif., assignor to Wizer Equipment, Inc., National City, Calif.

Filed Apr. 1, 1985, Ser. No. 718,237

Int. Cl.[4] B41F *35/00;* **B41L** *41/00*

U.S. Cl. 101—416 R **4 Claims**



1. An attachment for spraying powder onto sheets of paper being delivered to the delivery tray of a lithographic type printing press, said attachment comprising:

an elongated cylindrical tube for mounting above a sheet delivery tray of a printing press, said tube having a closed end, and an open end for connecting to a source of powder;

a source of powder carried by an air stream for supplying powder to said tube;

a plurality of spray ports formed alternately as a single port and as a pair of ports disposed along the length of said tube, and said pairs are positioned at different circumferential positions around said tube relative to said singles and are thereby at different angles relative to the axis of the tube than the singles for directing powder onto selected areas of sheets passing therebelow; and

a plurality of circular tube clamps disposed along said tube for selectively covering selected ones of said ports.

4,622,897

SHEET NUMBERING MACHINE

William J. Laverick, Chula Vista, and George A. Kendall, Solana Beach, both of Calif., assignors to Wizer Equipment, Inc., National City, Calif.

Continuation of Ser. No. 541,999, Oct. 14, 1983, Pat. No. 4,541,338. This application Jul. 1, 1985, Ser. No. 750,288

The portion of the term of this patent subsequent to Sep. 17, 2002, has been disclaimed.

Int. Cl.[4] B41F *1/06*

U.S. Cl. 101—316 **10 Claims**

1. A character printing machine comprising:

a generally box-like base,

an adjustable slope platen mounted on said base for supporting a sheet of paper to be imprinted,

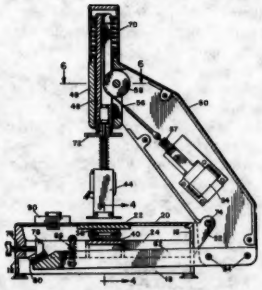
platen adjusting means mounted in said base for adjusting the slope of said platen,

an elongated support arm adjustably pivotally secured to one side of said base and extending upward over said platen for adjustment toward and away from said platen,

support arm adjusting means mounted in said base for selectively adjusting said arm toward and away from said

platen, comprising screw activated cam and lever means for pivotally adjusting said arm relative to said base,

a reciprocating plunger supported by said arm over said platen and reciprocable toward and away from said platen,



a solenoid, and means for connecting said solenoid to said plunger for reciprocating said plunger, and

a printing head mounted on said plunger for imprinting a character on a sheet supported by said platen.

4,622,898

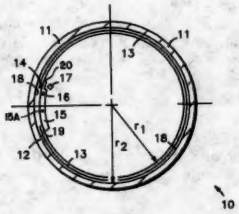
SPIN ACTIVATED MECHANISM

Randy L. Dahl, Scottsdale, Ariz., assignor to Motorola, Inc, Schaumburg, Ill.

Filed Apr. 1, 1985, Ser. No. 718,322

Int. Cl.[4] F42C *15/22*

U.S. Cl. 102—237 **5 Claims**



5. A method of safe and arming a device comprising the steps of:

providing a cylindrical housing having an inner circumference being defined by an inner wall, said inner wall having a stub protruding radially inward therefrom;

providing a lever having a first end, a second end and a center of gravity, said lever being pivotally coupled to said device between said first end and said center of gravity;

providing a spring having an inner side, an outer side, and a coil, said coil having a first end and a second end, said coil being juxtaposed to said inner wall of said cylindrical housing, said first end being secured to said device, said second end contacting said stub of said cylindrical housing on said outer side of said coil and said inner side of said coil contacting said lever;

subjecting said device to centrifugal forces;

causing said spring to be forced radially against said inner wall of said cylindrical housing;

causing said second end of said coil to move circumferentially away from said first end of said coil;

releasing said lever; and

forcing said second end of said lever to contact said inner wall of said cylindrical housing and forcing said second end of said lever to contact an activating device.

4,622,899

SMOKE PROJECTILE WITH SEQUENTIAL CHARGES AND CENTRAL IGNITOR

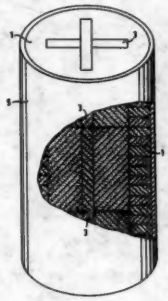
Manfred Weber, Eisenberg, Fed. Rep. of Germany, assignor to Pyrotechnische Fabrik F. Feistel GmbH & Co. KG, Fed. Rep. of Germany

Filed Oct. 14, 1983, Ser. No. 543,112

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1982, 32384556

Int. Cl.[4] F42B *13/34*

U.S. Cl. 102—334 **25 Claims**



1. A smoke-screen-generating projectile having imperforate side walls, a central axis and an ignition device and wherein:

two or more smoke charges or sets of smoke charges are sequentially arranged along the central axis,

each smoke charge or set of smoke charges is in a separate chamber,

adjacent smoke charges or sets of smoke charges have a corresponding ignition charge with decomposition action along said central axis,

the ignition device is adjacent one of plural sequential smoke charges or sets of smoke charges; and

the decomposition action is sufficient to breakdown smoke charges into pieces and to disperse the pieces so that they are separated from each other, each such piece thereafter comprising independent means for generating smoke.

4,622,900

EXPLODING MISSILE

Wolfram Witt; Hendrick Lips; Herbert Scholler, and Raimund Schweiger, all of Duesseldorf, Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Jun. 25, 1984, Ser. No. 624,042

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1983, 3322927

Int. Cl.[4] F42B *13/00, 1/02, 25/02*

U.S. Cl. 102—387 **8 Claims**

1. An exploding missile comprising:

a casing;

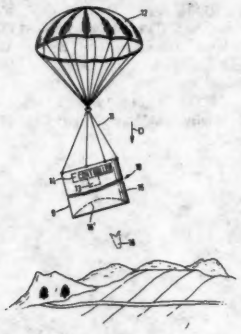
means attached to the casing for making a first portion of it move in a predetermined direction relative to the remainder of the casing after launch;

a charge in the casing having a projectile-forming front face;

an antenna on the casing behind the front face and charge and displaceable between a retracted position wholly behind the charge and an extended position projecting laterally therefrom and directed at least generally forwardly in the direction past the charge;

actuation means connected between the casing and the antenna for moving same from the retracted into the extended position after launch of the missile;

control means including a receiver connected to the antenna and a detonator in the charge for detecting the distance to a target in front of the missile and exploding the charge when a predetermined distance is detected;



the means for making the first portion of the casing move is a parachute attached to the casing.

4,622,901

WARHEAD

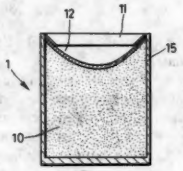
Wolfram Witt, Duesseldorf, and Herbert Scholles, Meerbusch, both of Fed. Rep. of Germany, assignors to Rheinmetall GmbH., Duesseldorf, Fed. Rep. of Germany

Filed Nov. 30, 1984, Ser. No. 676,663

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1983, 33432651

Int. Cl.[4] F42B *11/22*

U.S. Cl. 102—476 **5 Claims**



1. An improved warhead adapted to be expelled from a projectile or flying body during its flight phase, said warhead having electromagnetic radiation means forming target recognition means which include antenna means, a detonating charge being a shaped charge with a cavity and said detonating charge also includes a projectile-forming layer, and means for igniting the detonating charge when said target recognition means has recognized a target, the improvement comprising,

wherein said antenna consists of a substantially annularly-shaped structure in contact with and blocking off an annular peripheral region of said projectile-forming layer.

4,622,902

HATCH COVER AND LOCKING STRUCTURE

Roy W. Miller, 2545 Lincoln St., Highland, Ind. 46322

Filed Jul. 30, 1984, Ser. No. 635,710

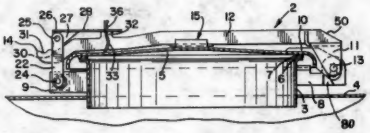
Int. Cl.[4] B61D *39/00*

U.S. Cl. 105—377 **19 Claims**

1. A hatch cover assembly for covering a hatch of a lading container, said hatch cover assembly comprising:

a locking bar and a hatch cover, said locking bar having a first end portion pivotally mounted to a first portion of said hatch for enabling said hatch cover to be moved to an open position or a closed position with respect to said hatch, said locking bar being adapted for overlaying said hatch cover in the closed position, said locking bar having a second end portion having a locking detent and a retaining detent;

a locking member pivotally engaged with a mounting member affixed to a second portion of said hatch, said locking member being pivotally and rotatably selectively engagable with said locking detent and retaining detent of said second end portion of said locking bar, said locking member having first and second lobes thereon, said first lobe engaging the locking detent to cammingly coact therewith for sealingly engaging said hatch cover to said hatch and said first lobe and second lobe engaging said locking detent and said retaining detent respectively in a pressure release position for retainingly engaging said locking bar for allowing pressure within said container to be dissipated before said locking menber is pivotally movable to a position out of engagement with said second end of said locking bar.



12. In a hatch cover locking assembly, said locking assembly having a linkage having a first portion pivotally engaged with a mounting bracket on a hatch and a second portion pivotally engaged with a camming member for forcing said hatch cover downwardly into sealing engagement with said hatch, an improved camming pressure adjustment comprising:

aperture means in said mounting bracket,

an adjustment member supported in said aperture means and the adjustment member and the aperture means being shaped to constrain the adjustment member in the aperture means against rotation in one of a plurality of angular positions oriented about the axial direction of the adjustment member;

pivot means eccentrically mounted on said adjustment member, said first portion of said linkage being mounted to said pivot means whereby the camming pressure of the locking assembly on the hatch cover is adjusted by selective placement of the adjustment member in one of the angular positions.

4,622,903

SEWAGE SCREENINGS DISPOSAL SYSTEM

William C. Warren, Doncaster, and Arpad Futo, Ferny Creek, both of Australia, assignors to Warren Engineering Pty. Ltd., Glen Waverley, Australia

PCT No. PCT/AU83/00160, § 371 Date Jun. 14, 1984, § 102(e) Date Jun. 14, 1984, PCT Pub. No. WO84/01941, PCT Pub. Date May 24, 1984

PCT Filed Nov. 4, 1983, Ser. No. 621,929

Claims priority, application Australia, Nov. 18, 1982, PF6873

Int. Cl.[4] F23G *5/04*

U.S. Cl. 110—221 **18 Claims**

1. A sewage screenings disposal system comprising:

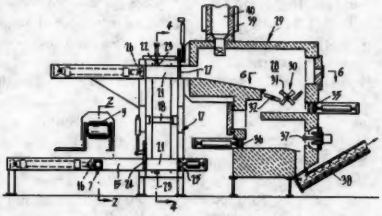
(a) dewatering press means for reducing the moisture content of raw screenings by pressing the raw screenngs into a compact slug;

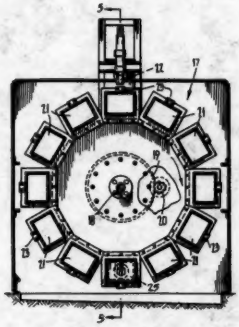
(b) a storage carousel for cooperation with the dewatering press means, the storage carousel having a plurality of storage compartments;

(c) loader means for loading slugs of pressed screenings discharged from the dewatering press means into an empty carousel storage compartment of the storage carousel when the empty storage compartment is positioned at a carousel loader position;

(d) an incinerator for cooperation with the storage carousel, the incinerator comprising combustion means to transform the slugs of pressed screenings into ash;

(e) means to move said loaded carousel storage compartment from the carousel loader position to an incinerator feeder position spaced from the carousel loader position;





(f) feeder means at the incinerator feeder position for feeding the slugs of pressed screenings from the loaded carousel storage compartment into the incinerator when the loaded carousel storage compartment is at the incinerator feeder position; and

(g) means for removing the ash from the incinerator.

4,622,904

COMBINED FLUIDIZED BED CALCINER AND PULVERIZED COAL BOILER AND METHOD OF OPERATION

Melvin E. Murphy, Jakarta, Indonesia, and Wadie F. Gohara, Barberton, Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Dec. 13, 1985, Ser. No. 809,086
Int. Cl.[4] F23D *1/00*
U.S. Cl. 110—263 **6 Claims**

1. A fluidized bed calciner operating with a coal fired boiler comprising:

a fluidized bed combustion chamber wherein coal is burned and hot flue gases and lime are produced;

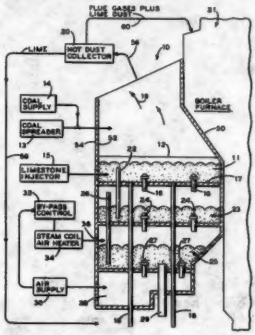
a first fluidized lime cooler bed adjacent said combustion chamber including means for receiving lime produced in said combustion chamber and means for supplying air to fluidize said fluidized bed combustion chamber;

a second fluidized lime cooler bed adjacent said first fluidized lime cooler bed including means for receiving lime from said first fluidized lime cooler bed and means for supplying air to fluidize said first fluidized lime cooler bed;

a windbox adjacent said second fluidized lime cooler bed for supplying air to fluidize said second fluidized lime cooler bed;

air suply means for supplying air to said windbox;

bypass means for selectively circulating a portion of said air from said air supply means to fluidize said first fluidized lime cooler bed, said bypass means having steam coil heating means for selectively heating said air supplied to said first fluidized lime cooler bed;



first-removal means for removing lime from said second fluidized lime cooler bed; and,

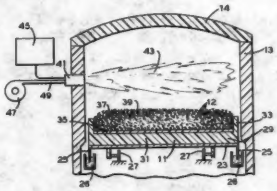
second removal means for separately removing combustion by-products from said fluidized bed combustion chamber.

4,622,905

FURNACING

John MacDougall, Pittsburgh, and John K. Pargeter, Ellwood City, both of Pa., assignors to International Metals Reclamation Co., Inc., Ellwood City, Pa.

Filed Mar. 4, 1985, Ser. No. 707,796
Int. Cl.[4] F23D *1/00*
U.S. Cl. 110—347 **8 Claims**



1. A process of furnacing agglomerates containing both metal oxide and reductant comprising positioning said agglomerates on the upper surface of a substantially impervious hearth causing said hearth to move in an enclosure beneath and countercurrently to the direction of movement of product of combustion gases, employing as at least part of the fuel source for said product of combustion gases a powdered solid fuel selected from the group of coke, anthracite coal, bituminus coal and sub-bituminous and combusting said fuel source approximately stoichiometrically with an oxygen-containing gas to provide (A) a plurality of luminous flames at a maximum flame temperature in excess of about 1920° K. in said enclosure whereby said luminous flames are a primary source of radiant energy for direct heating of said agglomerats and (B) product of combustion gases deficient in free oxygen and having a velocity sufficient to pneumatically carry ash out of said enclosure.

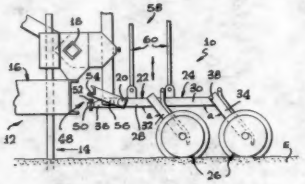
4,622,906
ONION PLANTER

Raymond Melgoza, P.O. Box 443, Coalinga, Calif. 93210

Continuation-in-part of Ser. No. 534,668, Sep. 22, 1983, Pat. No. 4,478,159, which is a continuation of Ser. No. 305,956, Sep. 28, 1981, abandoned. This application Oct. 19, 1984, Ser. No. 662,782

Int. Cl.[4] A01C *5/00*

U.S. Cl. 111—84 **18 Claims**



1. In apparatus for simultaneously planting seeds in a plurality of adjacent beds of earth separated by substantially parallel furrows, the apparatus including a mainframe mountable on a vehicle for movement with the vehicle over beds of earth disposed along a path in a predetermined direction of travel, a subframe having at least one axle mounted on the mainframe, the subframe arranged with the axle thereof being oriented substantially horizontally and transversely of the predetermined direction of travel, and a plurality of arms mounted on the axle of the subframe for independent pivotal movement about the axle in individual, spaced substantially parallel planes disposed substantially normal to the axle, each of the arms including a pair of spaced ends and a pivot point disposed between the spaced ends, a disc unit being mounted at the first of the ends of each of the arms; the improvement wherein adjustable stop means is disposed at the second of the ends of each of the arms for limiting movement of the respective arm by cooperating with the subframe, the stop means of the arm including a rod adjustably mounted at the second end of each arm and an abutment mounted on the subframe above and in the path of the rod for engagement by the rod.

4,622,907
PROGRAMMING AND DISPLAY SYSTEMS FOR AN EMBROIDERY MACHINE

Jiro Kimura, Aichi, Japan, assignor to Ricoh Denshi Kogyo Co., Ltd., Tokyo; Nakanihon System Co., Ltd., Nagoya and Barudan Co., Ltd., Ichinomiya, all of, Japan

Filed Nov. 30, 1984, Ser. No. 676,804

Claims priority, application Japan, Dec. 1, 1983, 58-227139

Int. Cl.[4] D05B *21/00*

U.S. Cl. 112—121.12 **9 Claims**

1. An embroidery machine comprising:

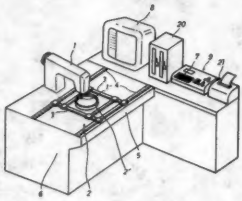
stitch forming means for forming stitches on a fabric;

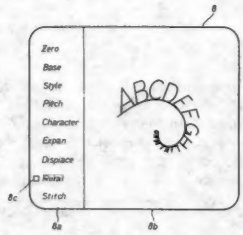
a fabric holding means which holds said fabric with embroidery hoops and moves on a plurality of rails provided on a sewing table;

driving means having a driving unit using the driving force of the sewing motor for vertically reciprocating the stitch forming means, a first moving means for moving the fabric holding unit along one of said rails and a second moving means for moving the fabric holding unit along the other rail;

pattern determining means comprising a CPU (Central Processing Unit), a ROM (read-only Memory) which stores a control program defining a series of control procedures to be executed by the CPU, a random access storage which stores temporarily the results of various operations performed by the CPU, a basic ROM, which previously stores a plurality of geometric patterns formed by straight lines and curves to be selected in accordance with input signals given by means of the keyboard, a character pattern ROM, which stores block letters, Gothic letters and English capital letters, a video RAM which reads and stores the information of determined patterns at predetermined addresses thereof, and a CRT controller (Cathode-Ray Tube controller) which controls a CRT to display the contents of the video RAM in accordance with the commands given by the CPU; and

means for displaying on the CRT a pattern, two-dimensionally and an input unit for feeding a pattern element to be displayed on the CRT, a keyboard which functions as an input unit with which a pattern is created and control signals based on the created pattern are fed into the control system and a cathode-ray tube, namely, a two-dimensional display unit, which visually displays a pattern which is substantially the same as a pattern created by operating the keyboard and to be formed actually on the fabric when a pattern is created or the created pattern is changed or corrected in accordance with the input information given by means of the keyboard;





wherein said keyboard includes function keys for facilitating numeric input operation, operation keys each marked with a specific arrow symbolizing the operation of the control system and LEDs (Light Emission Diodes) which are turned on for the visual indication of permission to perform the input operation of the operation keys; and

wherein said microprocessor includes zero adjustment means, base indicating means, character style selecting means, pattern element selecting means, pattern element rotating means and stitching means which are executed in accordance with said control programs; and each said means includes means to be processed by means of the CRT and the keyboard; and

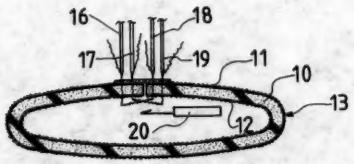
a motor controller including an x-y motor controller which controls stepping motors properly for the normal or the reverse rotation in accordance with commands given by the CPU to move the fabric holding means and a sewing motor controller which controls the sewing motor in accordance with commands given by the CPU to reciprocate the stitching means vertcially.

4,622,908

METHOD OF MANUFACTURING SLEEVE SHAPED BODY PROTECTORS

Per Tranberg, Lerum, Sweden, assignor to Volcano International Medical AB, Sweden

Filed Oct. 22, 1984, Ser. No. 663,191
Claims priority, application Australia, Dec. 1, 1983, 21867/83
Int. Cl.[4] D05B *1/08;* A41D *27/24*
U.S. Cl. 112—262.2 2 Claims



1. A method of manufacturing sleeve-shaped protectors for portions of the body and made of a sheet of cloth comprising a core of resilient, porous material laminated upon both faces with a coarse fabric, the sheet being cut to suitable size and rolled into a tubular member to thereby form a joint between the two meeting edges, comprising the steps of:

locating a strip of fabric which is substantially non-resilient in its transverse direction along the joint between the meeting edges of the sheet, and

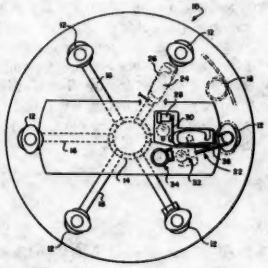
sewing said strip to the sheet using a machine having at least two needles to each side of the joint, operating the machine for criss-crossing the threads from the needles to opposite sides of the joint, across the latter, at the face of the cloth remote from the strip.

4,622,909

METHOD AND APPARATUS FOR APPLYING A GUSSET TO MANUFACTURED ARTICLES

Gazzarrini Vinicio, Florence, Italy, assignor to Solis S.r.l., Florence, Italy

Filed Jul. 6, 1979, Ser. No. 55,261
Claims priority, application Italy, Jul. 7, 1978, 9529 A/78
Int. Cl.[4] D05B *21/00*
U.S. Cl. 112—262.3 12 Claims



4. A method for applying a gusset to a pantyhose article having a crotch opening comprising the steps of:

manually positioning the crotch opening of the pantyhose article over a support device including gripper means and having an open mouth;

moving the support device to a sewing station;

positioning the gusset onto the article over the crotch opening;

sewing the gusset to the article; and

removing the article with the gusset sewn thereto from the support.

5. A method for applying a gusset to a pantyhose having a crotch opening, comprising the steps of:

positioning the pantyhose over a support device including gripper means and having an open mouth with the crotch opening stretched over the open mouth;

moving the support device with the manufactured article to a sewing station;

positioning the gusset onto the pantyhose;

sewing the gusset to the pantyhose; and

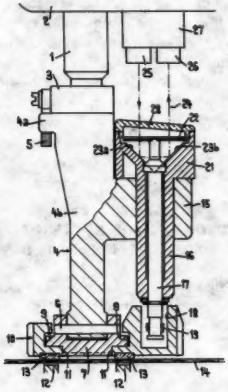
removing the pantyhose with the gusset sewn thereto from the support device.

4,622,910

BUTTON HOLE SEWING DEVICE

Otto Hangarter, Mathias Claudius Str. 22, 7707 Engen, Fed. Rep. of Germany; Hansulrich Lerch, Zelgistrasse 11, and Otmar Stillhard, Ofenbachstrasse 14, both of 8266 Steckborn, Switzerland

Filed Jun. 18, 1985, Ser. No. 745,892
Claims priority, application Switzerland, Jun. 27, 1984, 3105/84
Int. Cl.[4] D05B *3/06*
U.S. Cl. 112—447 20 Claims



1. Button hole sewing device for a sewing machine, having a casing and a presser bar, comprising a presser foot removably connected to said presser bar, engagement means associated with said presser foot for engaging a material to be sewn and for movement within said presser foot with said material when it is sewn, a distance sensing device having a displaceable part near an upper end of said presser foot and near said presser bar, stationary optical detector means mounted on said casing of said sewing machine for optically detecting displacement of said displaceable part, transmission means for transmitting movement of said engagement means to said displaceable part, said distance sensing device being adapted for sensing partial steps of said material to be sewn, and control means associated with said distance sensing device for counting predetermined numbers of partial steps and for reversing the sewing operation when the predetermined numbers are attained.

4,622,911

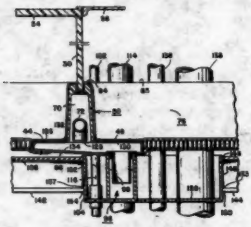
PLUMBING INSTALLATION

Arthur H. Salminen, Waynesboro, Va., assignor to Hopeman Brothers, Inc., Waynesboro, Va.

Division of Ser. No. 478,388, Mar. 24, 1983, Pat. No. 4,477,934.
This application Aug. 23, 1984, Ser. No. 643,364
Int. Cl.[4] A47K *4/00*
U.S. Cl. 114—71 6 Claims

1. A plumbing installation comprising a metal deck having

an opening, a rigid metal box having vertical side walls, the box being located in the deck opening, and the deck opening substantially conforming to the side walls of the box, said side walls being secured to the deck by a weld whereby the box is supported substantially entirely by the deck, a liquid trap comprising means defining an upright U-shaped flow path having an inlet end and an outlet end, wherein said U-shaped flow path is located at least partly within the box and the lowermost part of said U-shaped flow path is located below the deck



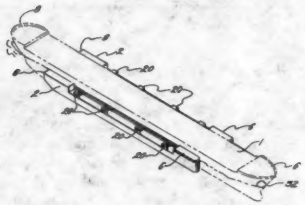
surface, first conduit means extending into said box from above the deck, said first conduit means being connected directly to the inlet end of the U-shaped flow path of said trap, and arranged to conduct liquid to said flow path from the exterior of said box, and second conduit means extending into the box from below the deck, said second conduit means being connected directly to the outlet end of said U-shaped flow path and arranged to conduct liquid from said flow path to a location on the exterior of said box below the deck.

4,622,912

DRAFT REDUCTION SYSTEM FOR SHIPS

Jim Bleke, 1799 Stumpf Blvd., Suite 2, Bldg. 8, Gretna, La. 70053

Filed Feb. 9, 1984, Ser. No. 578,577
Int. Cl.[4] B63B *43/14*
U.S. Cl. 114—123 **12 Claims**



1. An apparatus for reducing the draft, in navigation, of a vessel, comprising:

a. a first and a second semi-submersible hull means;

b. tension means, cooperatively joining said first and said second hull means, adapted for drawing said first and said second hull means into adjoining relationship to starboard and port of the vessel;

c. means for supporting said vessel under at least part of its bottom at a location inboard of the sides of said vessel during the draft reduction operation, said means rigidly extending outwardly from said semi-submersible hull means and at the bottom thereof;

d. ballast means for varying the buoyancy of said first and said second hull means; and

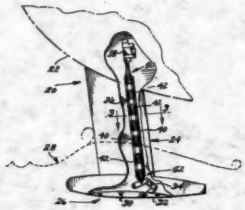
e. controllable propulsion means within said first and said second hull means.

4,622,913

HYDROFOIL FLAP CONTROL ROD SYSTEM

John W. Williams, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 13, 1984, Ser. No. 649,934
Int. Cl.[4] B63B *1/28*
U.S. Cl. 114—280 **6 Claims**



1. A hydrofoil flap control rod system for communicating forces between an actuator and a hydrofoil flap, comprising:

(a) a control rod having a first end and a second end, the first end connected to the actuator, the second end connected to the hydrofoil flap, the control rod having first and second pairs of substantially flat side surfaces, each pair of the side surfaces extending between the first end and the second end of the control rod; and

(b) guide means for guiding the control rod for reciprocal movement along the longitudinal axis of the control rod, the guide means including:

(i) a strut member extending between the actuator and the hydrofoil flap, the strut member having at least one substantially flat longitudinal guide surface;

(ii) two guide plates affixed to the longitudinal guide surface of the strut member, the guide plates extending along the strut member substantially between the actuator and the hydrofoil, each guide plate having a substantially flat guide surface, the guide plates being affixed to the longitudinal guide surface so that the guide surfaces of the guide plates are spaced apart and facing each other;

(iii) a keeper element removably attached to the guide plates, the keeper element having a substantially flat guide surface, the keeper guide surface being spaced apart from and facing the longitudinal guide surface of the strut member, the guide surfaces of the guide plates, the keeper guide surface, and the longitudinal guide surface of the strut member forming a conduit between the actuator and the hydrofoil flap, the control rod extending through the conduit with each side of the control rod being substantially parallel to an adjacent guide surface.

4,622,914

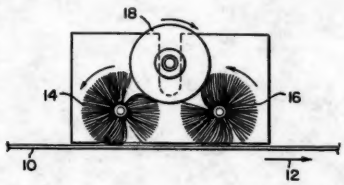
APPARATUS FOR TREATING A MOVABLE SURFACE

Vladimir A. Garris, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 26, 1985, Ser. No. 727,461
Int. Cl.[4] B05C *11/00*; G03G *21/00*
U.S. Cl. 118—77 **6 Claims**

1. In apparatus for treating a movable surface with material from an abradable source of such material, the apparatus including a movable applicator adapted to brush against both the source and the surface (1) to abrade the source and thereby erode material from the source and (2) to transfer eroded material to the surface, the improvement wherein the source is a cylindrical bar of erodable material mounted for rotation

about its longitudinal axis, whereby a continuously changing portion of its periphery is presented to the applicator such that



erosion of said bar is substantially uniform about said periphery.

4,622,915

DEVELOPING HEAD OF ELECTROPHOTOGRAPHIC SYSTEM

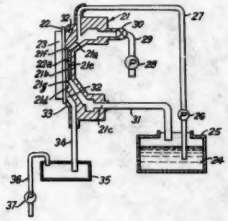
Shuichi Ohtsuka, and Akinori Kimura, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 6, 1984, Ser. No. 678,819

Claims priority, application Japan, Dec. 9, 1983, 58-231498

Int. Cl.[4] G03G *15/10*

U.S. Cl. 118—652 **10 Claims**



1. A developing head for a photosensitive face of electrophotosensitive material, in an electrophotographic system, comprising: means at said head for defining an opening including a first frame in front of said photosensitive face, means for supplying a liquid developer to said opening, means for supplying gas to said opening for removing liquid developer therefrom, said means for supplying said developer and said gas including a flow route perpendicular to the photosensitive face, a pressure-reducing chamber in said head adjacent said first frame, pressure-reducing means for evacuating said chamber, and a second frame around said pressure-reducing chamber for tightly contacting the photosensitive face.

4,622,916

COLOR IMAGE FORMING APPARATUS

Kiyoharu Tanaka, Yokohama; Akio Ohno; Yasushi Murayama, both of Tokyo; Osamu Hoshino, and Yusaku Takada, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

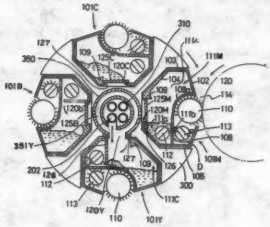
Filed Sep. 30, 1985, Ser. No. 781,532

Claims priority, application Japan, Oct. 18, 1984, 59-217418; Nov. 5, 1984, 59-231213; Nov. 7, 1984, 59-233065; Nov. 13, 1984, 59-238845

Int. Cl.[4] B05C *11/00*

U.S. Cl. 118—688 **69 Claims**

1. In combination, a developing device of the type in which a developing unit conveyor carries a plurality of developing units along a continuous path so that each developing unit is successively brought to a developing position for the development of a latent image on an image carrying member, and a toner supplying system, said toner supplying system comprising hopper means disposed externally of said developing unit conveyor and toner conveyor means extending from said



hopper means to a predetermined filling position of each of said developing units along said continuous path.

4,622,917

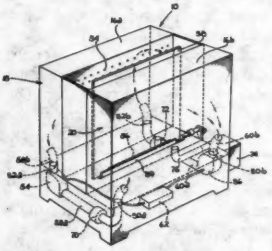
APPARATUS AND METHOD FOR ELECTROLESS PLATING

Charles H. Schramm, Fort Lee, N.J., assignor to ETD Technology, Inc., Shoreview, Minn.

Continuation of Ser. No. 423,821, Sep. 27, 1982, abandoned. This application Jan. 18, 1985, Ser. No. 692,880

Int. Cl.[4] H05K *3/42*

U.S. Cl. 118—696 **19 Claims**



1. An electroless plating apparatus comprising:

(a) a tank in which an article to be electrolessly plated is supported such that said article is at least partially immersed in a constituent bath within said tank; and

(b) means for creating a pressure difference within said bath, wherein said bath impinges onto a first surface of said article and is sucked away from a second surface of said article opposite said first surface, wherein said means for creating a pressure difference comprises:

(i) means a first preselected distance away from said first surface for directing said bath toward said first surface; and

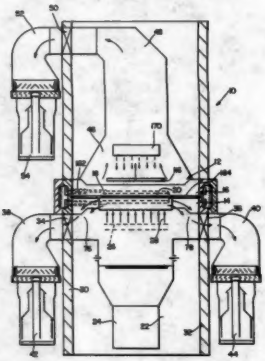
(ii) means a second preselected distance away from said second surface for drawing said bath away from said second surface, whereby said first and second surfaces are thoroughly subjected to said constituent bath.

4,622,918

MODULE FOR HIGH VACUUM PROCESSING

Edward Bok, Badhoevedorp, Netherlands, assignor to Integrated Automation Limited, Tortola, British Virgin Isls.

PCT No. PCT/NL84/00001, § 371 Date Sep. 28, 1984, § 102(e) Date Sep. 28, 1984, PCT Pub. No. WO84/03195, PCT Pub. Date Aug. 16, 1984
PCT Filed Feb. 3, 1984, Ser. No. 656,986
Claims priority, application Netherlands, Feb. 4, 1983, 8300351
Int. Cl.[4] B65G *53/16;* B65H *20/00;* C23C *16/00;* C23F *1/02*
U.S. Cl. 118—718 11 Claims



1. Module for processing advancing substrates comprising:

a. an elongated housing;

b. a series of transporter pairs superposed in said housing to define a confined longitudinal passage, said transporter pairs being aligned in the direction of substrate advance within the longitudinal passage, and including:

(i) a plurality of gas transport medium discharge ducts intersecting said longitudinal passage above and below said substrates and extending laterally away from said longitudinal passage, and

c. a source of pressurized gaseous transport medium communicating with said longitudinal passage from above and below via a series of transport medium supply ducts intersecting said longitudinal passage so as to provide a free floating transport for substrates advancing therethrough, and

d. a series of processing chambers interposed between said transporter pairs such that a non-processing side and a processing side of said substrates are exposed therein, said processing chambers including:

(i) a source of substrate processing medium, communicating with the processing side of said advancing substrates.

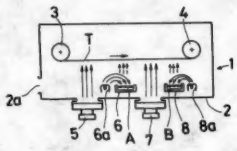
4,622,919

FILM FORMING APPARATUS

Yasuo Suzuki, and Yasunori Ando, both of Otsu, Japan, assignors to Nissin Electric Co., Ltd., Kyoto, Japan

Filed Sep. 21, 1984, Ser. No. 653,685
Claims priority, application Japan, Dec. 29, 1983, 58-249803
Int. Cl.[4] C23C *14/00*
U.S. Cl. 118—718 9 Claims

1. A film forming apparatus comprising a vacuum chamber, means for transporting a substrate within the vacuum chamber, a first ion source having an accelerating voltage of 500 V to 5 kV and disposed at a first position along the direction of movement of the substrate within the vacuum chamber, a first evaporator disposed at a second position along the direction of movement of the substrate within the vacuum chamber, and a second ion source having an accelerating voltage of 10 kv to



100 kV and disposed at a third position along the direction of movement of the substrate within the vacuum chamber.

4,622,920

ANIMAL LITTER

George R. Goss, Quincy, Ill., assignor to Oil-Dri Corporation of America, Chicago, Ill.

Filed May 8, 1985, Ser. No. 732,169
Int. Cl.[4] A01K *1/015*
U.S. Cl. 119—1 9 Claims

1. An animal litter composition which comprises particulate, absorbent inorganic solid material which is a member of the group consisting of clay and gypsum and, distributed on said solid material, an odor-abating amount of a compound represented by the formula

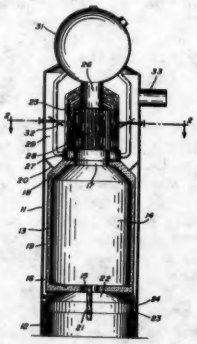
wherein R is a member of the group consisting of alkyl containing 1 to 4 carbon atoms.

4,622,921

COMBINED SULPHUR BURNING FURNACE AND BOILER

Gordon M. Cameron, North York, and John McFarland, Pickering, both of Canada, assignors to C-I-L Inc., North York, Canada

Filed Nov. 25, 1985, Ser. No. 801,600
Int. Cl.[4] F22D *1/00*
U.S. Cl. 122—7 C 6 Claims



1. Apparatus for producing a cooled, gaseous sulphur dioxide-air mixture comprising an external shell of a strong heat resistant material; sulphur burning means to provide an up-

wardly directed axial flow of a hot, gaseous sulphur dioxide-air mixture within said external shell; a plurality of water-cooled boiler tubes within said external shell and so arranged as

(a) to define an upper inner chamber above said sulphur burning means to receive said hot gaseous mixture in axial flow from said sulphur burning means,

(b) to define with said external shell an upper outer chamber to receive said gaseous mixture from said upper inner chamber by radial outflow, and

(c) to permit said radial outflow of said gaseous mixture from said upper inner chamber to said upper outer chamber and to effect cooling of said gaseous mixture; and cooled gaseous mixture exit means.

4,622,922

COMBUSTION CONTROL METHOD

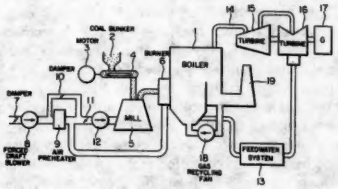
Hisanori Miyagaki, Hitachiota; Toshihiko Higashi; Atsushi Yokogawa, both of Hitachi; Yoshihiro Shimada, Izumi; Nobuo Kurihara, Hitachiota; Mitsuyo Nishikawa, Hitachi; Yoshio Sato, Hitachi; Atsumi Watanabe, Hitachi, and Yasuo Morooka, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 10, 1985, Ser. No. 743,439

Claims priority, application Japan, Jun. 11, 1984, 59-118296; Oct. 15, 1984, 59-215691; Feb. 1, 1985, 60-16554

Int. Cl.[4] F22B *37/42*

U.S. Cl. 122—449 **19 Claims**



1. A combustion control method for a furnace, in a boiler, having one or more combustion zones in each of which a burner can be controlled by adjusting the amounts of fuel and air, comprising the steps of:

(a) obtaining a two-dimensional high and low density image having a high and low density regions from a combustion flame and combustion gas in each combustion zone by means of image fiber means and image forming camera means;

(b) estimating for each combustion zone the concentration of NO_x in accordance with the two-dimensional high and low density image obtained from the combustion flame in each combustion zone, and estimating the concentration of NOx at the outlet of the furnace with the use of the estimated concentration for each combustin zone;

(c) estimating for each combustion zone the amount of unburnt coal in ash in accordance with the two-dimensional high and low density image obtained from the combustion flame in each combustion zone, and estimating the amount of unburnt coal in ash at the outlet of the furnace with the use of the thus estimated amount of unburnt coal in ash;

(d) evaluating the stability of combustion with the use of the two-dimensional high and low density image for each combustion zone;

(e) estimating the thermal efficiency of the boiler upon controlling of the amounts of fuel and air for each combustion zone with the use of a furnace heat transfer model; and

(f) changing the amounts of fuel and air for each combustion zone when the stability of combustion is satisfactory while either one of the estimated concentration of NO_x at the outlet of the furnace and the estimated amount of unburnt coal in ash thereat exceeds the associated limited value, to allow either one of the estimated concentration of NO_x at the outlet of the furnace and the amount of unburnt coal in ash thereat to satisfy the associated limiting condition while to maximize the boiler efficiency.

4,622,923

ENCASED ENGINE GENERATOR

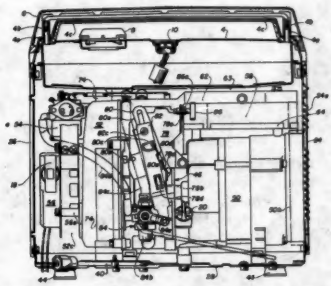
Akira Nishimura; Masami Yoshii, and Shigeharu Yasui, all of Chaya, Japan, assignors to Yanmar Diesel Engine Co., Ltd., Chaya, Japan

Filed Feb. 25, 1985, Ser. No. 705,293

Claims priority, application Japan, Jul. 31, 1984, 59-162347

Int. Cl.[4] F02B *67/04*

U.S. Cl. 123—2 **14 Claims**



1. An encased engine generator having an air-cooled engine and a generator housed in a case approximately structured in a rectangular parallelepiped having a front and a rear, wherein a fuel tank is provided along the upper surface of the case, an engine having a cooling fan at its side is disposed within the case beneath said fuel tank, a generator interlocked with said engine is disposed at the downstream side of the cooling air from said cooling fan, a silencer is disposed in a rearward space between said fuel tank and generator so that its outer circumference may be cooled by part of said cooling air, and operating parts such as engine operation knob necessary for operation and maintenance are provided on the front face wall of the case which encloses the remaining cooling air while cooling and exhaust discharge occurs from the rear, away from the operator.

4,622,924

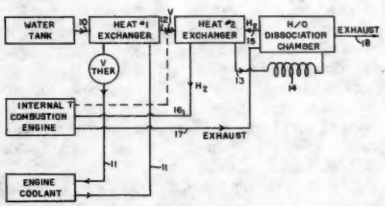
HYDROGEN ENGINE

William N. Lewis, Rte. 4, Box 1090, Baxley, Ga. 31513

Filed Jun. 20, 1983, Ser. No. 505,781

Int. Cl.[4] F02B *43/08*

U.S. Cl. 123—3 **10 Claims**



8. A power generation process wherein hydrogen is generated and used as engine fuel at substantially the same rates of generation and fuel utilization so that storage may be substantially avoided, and with said process comprising the steps of

introducing water into a hydrogen-oxygen dissociation apparatus through valve means controlled by an engine throttle, dissociating hydrogen and oxygen in the dissociation apparatus by vaporizing the water to stream at a temperature of between 500° F. and 900° F. and contacting the steam with oil or resin, and feeding the hydrogen as it is generated into the engine for combustion therein.

4,622,925

COOLING SYSTEM FOR AUTOMOTIVE ENGINE OR THE LIKE

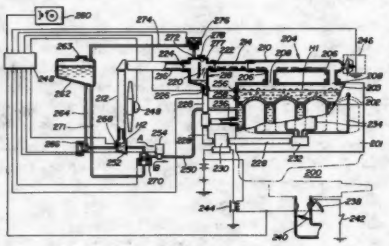
Takao Kubozuka, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Aug. 5, 1985, Ser. No. 762,394

Claims priority, application Japan, Aug. 7, 1984, 59-164213

Int. Cl.[4] F01P *3/22*

U.S. Cl. 123—41.25 **12 Claims**



1. In an internal combustion engine

a structure subject to high heat flux, and

a cooling system for removing heat from said structure, said cooling system comprising:

a cooling circuit including:

a coolant jacket formed about said structure and into which coolant is introduced in liquid form and permitted to boil;

a radiator in which gaseous coolant is condensed to its liquid state;

a vapor manifold communicating with said coolant jacket;

a vapor transfer conduit leading from said vapor manifold to said radiator;

separation means disposed in said vapor transfer conduit for separating liquid and gaseous coolant, said separation means including a drain port;

a first conduit interconnecting said drain port and said coolant jacket;

a drain pump disposed in said first conduit for inducting coolant from said drain port and for pumping same into said coolant jacket;

a second conduit leading from said coolant jacket to said first conduit at a location intermediate of said drain port and said pump; and

coolant return means for returning liquid coolant from said radiator to said coolant jacket in a manner to maintain said structure immersed in a predetermined depth of liquid coolant;

4,622,926

AIR INTAKE SYSTEM OF A MULTI-CYLINDER INTERNAL COMBUSTION ENGINE

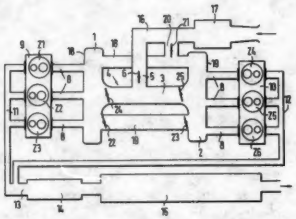
Erwin Rutschmann, Bad Herrenalb, and Ludwig Theilemann, Boeblingen, both of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 3, 1985, Ser. No. 751,511

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1984, 3424433

Int. Cl.[4] F02B *27/00*

U.S. Cl. 123—52 MB **8 Claims**



1. An air intake installation of a multi-cylinder internal combustion engine, comprising a substantially I-shaped distributor means matched for tuned-intake pressure-charging which includes two resonance chamber means and a connecting pipe means interconnecting the two resonance chamber means, individual suction pipes leading from the resonance chamber means to the cylinders of the engine, an intake connection terminating approximately perpendicularly in the connecting pipe means and controllable by a throttle valve means, means during operation of the internal combustion engine for changing at least one of through-flow cross section and volume of the air intake installation connecting the resonance chamber means, at least one bypass pipe means operatively connecting the resonance chamber means being located substantially in parallel to the connecting pipe means, throttle valve means for controlling the air flow through the bypass pipe means, said one bypass pipe means including an intake connecting means controllable by a throttle valve means, by way of which air enters in parallel to the intake connection means of the connecting pipe means, and wherein a second bypass pipe means is connected between the resonance chamber means, the second bypass pipe means and the connecting pipe means being operable to be closed by throttle valve means.

4,622,927

INTERNAL COMBUSTION ENGINE

Ludwig Wenker, Steinerstr. 1, 8543 Hipoltstein-Hofstetten, Fed. Rep. of Germany

Filed Feb. 19, 1985, Ser. No. 702,452

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1984, 3405893

Int. Cl.[4] F02B *75/04*

U.S. Cl. 123—58 B **19 Claims**

1. An internal combustion engine, comprising:

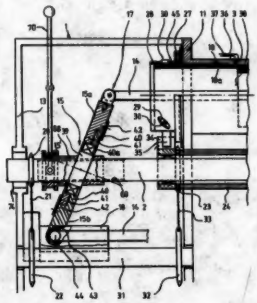
a housing;

an output shaft journaled in said housing;

an array of four cylinders on said housing disposed around said output shaft and parallel thereto, each of said cylinders defining a cylinder axis and having two pistons moving in opposite directions;

a respective wobble element on said shaft operatively connected with a respective set of pistons on a respective side of said array of cylinders, each of said wobble elements having two identical halves angularly displaceable relative to one another about a respective wobble axis lying at an angle with respect to said output shaft, each of said halves having a pair of arms connected pivotally to diametrically opposite ones of said pistons and interdigitated

with the pair of arms of the other of said halves, the arms of each half projecting toward the other half so that pivots connecting said arms to said pistons all lie in the same plane for each wobble element; and



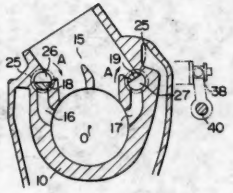
means on said housing for guiding at least one of the halves of each wobble element for movement parallel to said output shaft.

4,622,928

EXHAUST CONTROL SYSTEM FOR TWO-CYCLE ENGINE

Eizaburo Uchinishi, Hyogo, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Japan

Filed Mar. 19, 1985, Ser. No. 713,544
Claims priority, application Japan, May 23, 1984, 59-104996
Int. Cl.[4] F02B *75/02*
U.S. Cl. 123—65 PE **10 Claims**



1. An exhaust control system for a two-cycle engine having at least one cylinder comprising:

a main exhaust passage communicating with said cylinder;

at least one auxiliary exhaust passage located laterally of said main exhaust passage circumferentially of a cylinder; and

at least one rotary valve for adjustably opening and closing said auxiliary exhaust passage, said rotary valve being in the form of a shaft located parallel to a center line of the cylinder and interposed between the main exhaust passage and said auxiliary exhaust passage for rotation;

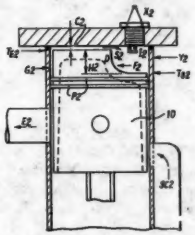
wherein said auxiliary exhaust passage remains closed with respect to the main exhaust passage when the engine operates at a low engine speed range and is successively opened with respect to the main exhaust passage as the speed of the engine increases.

4,622,929

DEFLECTOR PISTON TWO-STROKE ENGINE

Gordon P. Blair, Newtownabbey, Northern Ireland, assignor to The Queen's University of Belfast, Belfast, Northern Ireland

Filed Nov. 21, 1984, Ser. No. 673,528
Claims priority, application United Kingdom, Nov. 23, 1983, 8331289
Int. Cl.[4] F02B *75/02*; F02F *3/24*
U.S. Cl. 123—65 A **8 Claims**



1. A two-stroke internal combustion engine, comprising:

(A) a cylinder having a longitudinal axis;

(B) a cylinder head having a flat planar surface completely closing one end of said cylinder;

(C) a piston reciprocable within said cylinder in a direction coincident with said longitudinal axis towards and away from said cylinder head between a top dead center position wherein said piston and said cylinder head are closest together and a bottom dead center position wherein said piston and said cylinder head are furthest apart, a portion of said cylinder nearest said cylinder head constituting a piston crown;

(D) a scavenge port providing an inlet for a combustible gas mixture to the cylinder on one side thereon; and

(E) an exhaust port privididng an outlet for spent gases from the cylinder on an opposing side thereof, said exhaust and scavenge ports disposed, when said cylinder is viewed in plan, at diametrically opposite positions on the circumference of said cylinder, wherein:

(a) said piston crown is shaped to have a first flat planar surface adjacent said one side of said cylinder and a second flat planar surface adjacent said opposing side of said cylinder, a peripheral edge of said second flat planar surface co-operating with said scavenge port during said reciprocating movement of said piston to constitute a timing edge for said scavenge port;

(b) said piston crown is shaped to have said first flat planar surface nearer to said cylinder head than said second flat planar surface, a peripheral edge of said first flat planar surface co-operating with said exhaust port during said reciprocating movement of said piston to constitute a timing edge for said exhaust port;

(c) said first and second flat planar surfaces are interconnected by a transition wall in said piston crown, said transition wall having a shoulder means for connecting at a sharp angle said first planar surface and having a smooth surface curvature to said second flat planar surface;

(d) said scavenge port is disposed at a greater axial distance from said cylinder head than said exhaust port;

(e) said cylinder head provides to said cylinder a flat planar surface lying in a plane parallel to the plane of said first flat planar surface on said piston, said flat planar cylinder head surface and said first flat planar surface on said piston being disposed in very close proximity at said top dead center position; and

(f) an ignitor projecting into said cylinder extending to a point below said cylinder head and above said second flat planar surface so that when said piston is at said top

dead center position, said ignitor is disposed in an ignitiion chamber defined by:

(i) said second flat planar surface on said piston;

(ii) a part of said flat planar surface on said cylinder head which is in axially facing relationship with said second flat planar surface;

(iii) said transition wall on said piston crown extending between said first and second flat planar surfaces on said piston crown; and

(iv) a part of side walling of said cylinder which is in radially facing relationship with said transistion wall at top dead center.

4,622,930

ENGINE STARTER PROTECTING DEVICE

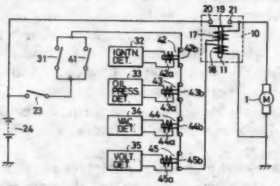
Isao Hamano; Akira Morishita; Yoshifumi Akae; Youji Nishimura; Toshinori Tanaka, and Kiyoshi Yabunaka, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 555,928, Nov. 29, 1983, Pat. No. 4,570,583. This application Jun. 21, 1985, Ser. No. 747,494

Claims priority, application Japan, Nov. 30, 1982, 57-182804

Int. Cl.⁴ F02N *11/08*

U.S. Cl. 123—179 K **3 Claims**



1. An engine starter protecting device for an engine starter of a type comprising a starter motor (**1**) for turning an engine, an electromagnetic switch (**10**) for controlling said starter motor, a key switch (**23**) for controlling said electromagnetic switch, and a battery (**24**) for electrically energizing said starter motor and said electromagnetic switch, comprising:

a first switch (**31**), operatively associated with said engine, which is closed when said engine is disengaged from wheels and otherwise opened, and second switch means operatively associated with said engine, which is opened when a speed of rotation of said engine is at or above a predetermined value and otherwise closed, said first switch and second switch means being connected in series with one another and coupled between said battery and said electromagnetic switch for controlling actuation of said electromagnetic switch;

wherein said second switch means comprises at least two detectors selected from a group consisting of an ignition detector (**32**) which operates when the frequency of engine ignition pulses is at a predetermined value or higher, an oil pressure detector (**33**) which operates when an engine lubrication oil pressure is at a predetermined value or higher, a vacuum pressure detector (**34**) which operates when a pressure of intake air to said engine is at a predetermined value or lower, and a charging detector (**35**) which operates when an output voltage of an alternator is at a predetermined value or higher; a plurality of relay coils (**42***a*–**45***a*) individually coupled to outputs of said detectors, each of said coils being energized when its associated detector operates, and a plurality of normally closed relay switches (**42***b*–**45***b*) connected in series and individually associated with and opened by said relay coils when energized.

4,622,931

INLET MANIFOLD

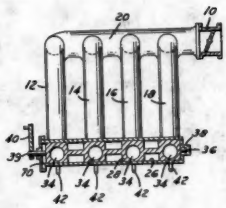
Damasius B. Wickramasuriya, South Benfleet, United Kingdom, assignor to Ford Motor Company, Dearborn, Mich.

Filed Jun. 27, 1985, Ser. No. 749,323

Claims priority, application United Kingdom, Oct. 23, 1984, 8426721

Int. Cl.⁴ F01L *7/10*

U.S. Cl. 123—190 A **2 Claims**



1. An inlet manifold for a multicylinder internal combustion engine, the manifold having an inlet tract for each cylinder and a valve at the downstream end of each tract, all the valves being connected to a common actuating member and being adapted to close the tracts, characterized in that the manifold has a cylindrical bore traversing all the tracts at their downstream ends, and a valve member inserted axially in the bore and having a valving portion associated with each tract, the valve member having a plug portion associated with each tract, each plug portion having a bore through it which, in the valve open position, allows flow through the valve without any obstruction of the manifold passage, the axes of the bores being offset from the major diameters of the plug portions.

4,622,932

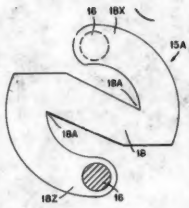
V-CRANKARM

Joseph Giocastro; Peter Giocastro, and James Giocastro, all of 6428 Metropolitan Ave., Middle Village, N.Y. 11379

Filed Aug. 2, 1983, Ser. No. 519,106

Int. Cl.⁴ F02B *75/06*

U.S. Cl. 123—192 R **1 Claim**



1. A crankarm system for translating a force of a piston of an internal combustion engine into rotating a crank shaft, comprising, in combination:

a crank pin connected to said piston,

a crankarm, said crankarm having a crank pin arm portion and a crank shaft arm portion, said crank pin arm portion having a crank pin end connected to said crank pin and an opposed connecting end, said crank shaft arm portion having a crank shaft end portin and an opposed connecting end, said crank pin arm portion and said crank shaft arm portion being connected at a first angle at said connecting ends,

said crank arm also having another crank pin arm portion and another crank shaft arm portion, said another crank

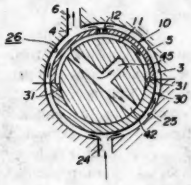
pin arm portion having a crank pin end and opposite connecting end and said another crank shaft arm portion having a crank shaft end portion and an opposite connecting end opposed to said crank shaft end portion, said another crank pin arm portion being connected to said another crank shaft arm portion at an angle equal to said first angle and at said opposite connecting ends of another crank pin arm portion and said another crank shaft arm portion, wherein said crankarm is configured in a shape of an S, with said crank pin arm portion and said another crank pin arm portion being opposed arcurate end elements of said S and said crank shaft arm portion and said another crank shaft arm portion being a diametrical connecting element of said S.

4,622,933

LUBRICANT FEED SYSTEM FOR USE IN THE JOURNAL OF A CRANKSHAFT

Koichi Fukuo, and Hiroki Yamamoto, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 13, 1985, Ser. No. 808,842
Claims priority, application Japan, Dec. 14, 1984, 59-265018
Int. Cl.[4] F01M *1/00*
U.S. Cl. 123—196 R **3 Claims**



1. A lubricant feed system for a journal of a crankshaft comprising first bearing supporting portions formed in a cylinder block, each having a peripheral surface, second bearing supporting portions formed in caps, each having a peripheral surface, first bearings arranged on said first bearing supporting portions, second bearings arranged on said second bearing supporting portions, and at least one oil main gallery, wherein annular grooves are circumferentially formed at the respective first and second bearing supporting portions, wherein oil grooves are circumferentially formed at the inner peripherial surfaces of said first bearings and apertures are formed at said first bearings to communicate said annular grooves with said oil grooves, wherein the inner peripheral surfaces of said second bearings are made flat, and wherein said oil main gallery is communicated with said annular grooves at said second bearings respectively.

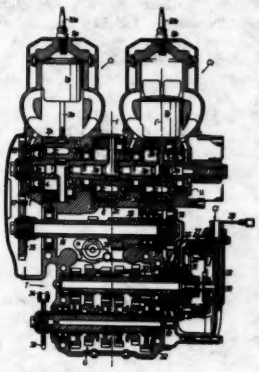
4,622,934

CRANKSHAFT STRUCTURE OF TWO-CYCLE INTERNAL COMBUSTION ENGINE

Kazuo Oyama, Niiza, Japan, assignor to Honda Giken Koygo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 424,175, Sep. 27, 1982, abandoned. This application Sep. 25, 1984, Ser. No. 654,287
Claims priority, application Japan, Sep. 26, 1981, 56-141978; Sep. 28, 1981, 56-142693
Int. Cl.[4] F02B *75/32*
U.S. Cl. 123—197 AC **2 Claims**

1. A crankshaft structure in a two-cycle internal combustion engine comprising a crank web and a crank journal rotatably supported in a crank case by a bearing means, said crank web including a supporting part having a central bore for receiving said crank journal press-fit therein, said supporting part having a reduced outer diameter portion disposed adjacent said bearing means supporting the crank journal and at an axial position overlying a press-fit part of said crank journal in said central bore of said crank web supporting part, said reduced outer



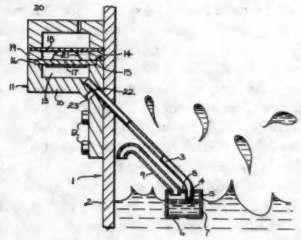
diameter portion of said supporting part having a sealing member disposed on the outer periphery thereof.

4,622,935

LOW LEVEL LUBRICATING OIL DETECTOR

Douglas G. Janisch, Mequon, Wis., assignor to Briggs & Stratton Corp., Wauwatosa, Wis.

Filed Nov. 13, 1985, Ser. No. 797,514
Int. Cl.[4] F02B *77/00*
U.S. Cl. 123—198 DC **10 Claims**



1. A low level lubricating oil detecting system for an internal combustion engine, comprising an oil reservoir in the engine to contain lubricating oil, a tubular member disposed in said reservoir, the lower end of said tubular member having an aperture disposed at a predetermined minimum oil level and said tubular member having an upper end, a housing defining a chamber, the upper end of said tubular member communicating with said chamber, pressure transducer means enclosing said chamber and being operably connected to said engine, pressure pulsations in said reservoir when the oil level recedes beneath said predetermined minimum level being transmitted through said tubular member and said chamber to flex said pressure transducer means and thereby discontinue operation of said engine.

4,622,936

ELECTRONIC FUEL CONTROLLER FOR AN AUTOMOTIVE INTERNAL COMBUSTION ENGINE

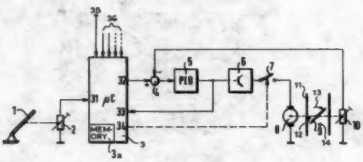
Erich Junginger, Stuttgart; Klaus Hahn, Bühlertal; Eberhard Schnaibel, Hemmingen, and Erich Schneider, Kirchheim, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 29, 1985, Ser. No. 760,124

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1984, 3430076; Mar. 21, 1985, 3510176

Int. Cl.[4] F02D *11/10*

U.S. Cl. 123—399 19 Claims



1. Electronic fule controller for an automotive internal combustion engine (ICE) having

an operator-controlled controller (1);

a command control transducer (2) coupled to the operator-controlled controller (1) and providing a transduced command signal;

a fuel supply control element (9, 29);

a position transducer (10) coupled to the fuel supply control element (9,29) and providng an actual fuel supply signal;

a positioning motor (8) coupled to the fuel supply control element for positioning thereof;

comparator means (4) coupled to receive as inputs said command signal and the actual fuel supply signal and comparing said signals and providing an error output signal upon deviation between the input signals; and

a control circuit (5) coupled to receive the error signal as an input and controlling operation of the positioning motor (8); and comprising, in accordance with the invention,

a logic and calculating circuit (3) including a memory section (3*a*) coupled between the command control transducer (2) and the comparator (4) and having a transfer function which modifies the command in relation to the actual fuel supply signal, with respect to a predetermined characteristic of the actual fuel supply signal at a predetermined operating condition of the engine,

said control circuit (5) being connected to the logic and calculating element (3), the logic and calculating element being responsive to and monitoring the output from the control circuit and recognizing when the output from the control circuit is zero or null, to thereby recognize a zero or null error signal,

said logic and calculating circuit (3) providing an input to the comparator means (4) representative of a test command signal which changes linearly, the memory (3*a*) storing the value of the test command signal when the output from the control circuit is recognized to be null or zero,

the memory (3*a*) storing a value representative of deviation between the transduced command signal received from the command transducer (2) and the modified command signal being applied to the comparator (4) which then results in an actual fuel supply signal having said predetermined characteristic.

4,622,937

VACUUM OPERATED APPARATUS FOR CONTROLLING THE IGNITION TIMING OF AN ENGINE

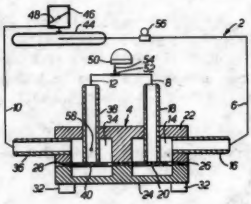
David T. Szloboda, 10640 Skagit Drive, Richmond, British Columbia, Canada V7E 2A2

Filed Apr. 4, 1985, Ser. No. 719,729

Claims priority, application United Kingdom, Dec. 13, 1984, 8431521

Int. Cl.[4] F02P *5/12*

U.S. Cl. 123—407 10 Claims



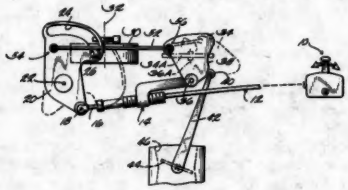
1. Vacuum operated apparatus for controlling the ignition timing of an engine, which apparatus comprises valve means and first, second, third and fourth conduit means, the valve means comprising a first chamber, first and second ports in the first chamber, first obturator means for opening and closing the second port, a second chamber, third and fourth ports in the second chamber, and second obturator means for opening and closing the fourth port, the first conduit means being for connecting the first port to an engine inlet manifold, the third conduit means being for connecting the third port to an engine carburettor, and the second and fourth conduit means being for connecting the second and fourth ports respectively to an engine distributor, and the apparatus being such that in use the valve means receives first vacuum forces from the inlet manifold via the first conduit means and second vacuum forces from the carburettor via the third conduit means, the valve means being operative to transmit the greater of the first and second vacuum forces via the second and fourth ports and the second and fourth conduit means to the engine distributor so that when the engine is started or idling, the first vacuum force passes from the engine inlet manifold along the first conduit means and the first port into the first chamber, thereby opening the first obturator means, the first vacuum force then passes along the second port, the second conduit means and the fourth conduit means, closing the second obturator means to close the fourth port causing the first vacuum force to accumulate and, according to its variable intensity, to cause the engine distributor to operate to advance the spark of the engine; as the engine is accelerated, the second vacuum force increases in the carburettor, any slight increase in this second vacuum force will be felt along the third conduit means and the third port which will cause the second obturator means to open due to the increased vacuum in the second chamber, the second vacuum force then passes via the fourth port, the fourth conduit means, the second conduit means and the second port, closing the first obturator means causing the first obturator means to close the second port thus the distributor will then be receiving vacuum forces from the carbutettor instead of the manifold, therefore the engine distributor always receives the optimum vacuum force for causing the optimum adjustment of the engine distributor to give the optimum engine ignition timing during engine operating conditions.

4,622,938

TIMING AND THROTTLE LINKAGE

Thomas D. Wenstadt, Winthrop Harbor, Ill., and Marcus W. Hagen, Racine, Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Continuation of Ser. No. 541,466, Oct. 13, 1983, abandoned.
This application Feb. 14, 1985, Ser. No. 702,423
Int. Cl.[4] F02D *37/00, 9/00;* F02P *5/04*
U.S. Cl. 123—413 6 Claims



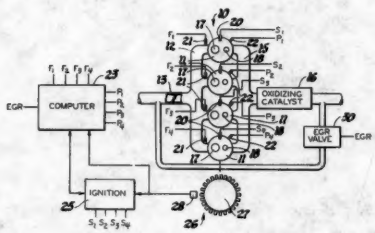
1. A timing throttle control for a spark ignition internal combustion engine having a fuel/air mixing device and a spark timing device, said control comprising a first pivot on the engine, a first lever mounted on said pivot and including a cam slot having a first portion which has a substantially uniform radius about said pivot and a second portion which has a non-constant radii about said first pivot, control means connected to said first lever to actuate said first lever about said first pivot, a second pivot on the engine in non-parallel relation to said first pivot, a second lever mounted on said second pivot and operative to control the timing of the spark timing device, a spherical cam follower mounted on said second lever and engaged with said cam slot, a third pivot on the engine spaced from said first and second pivots, a third lever mounted on said third pivot and operatively connected to the fuel/air mixing device, and a link interconnecting said first lever and said third lever.

4,622,939

ENGINE COMBUSTION CONTROL WITH IGNITION TIMING BY PRESSURE RATIO MANAGEMENT

Frederic A. Matekunas, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 28, 1985, Ser. No. 791,906
Int. Cl.[4] F02P *5/14*
U.S. Cl. 123—425 19 Claims



1. An ignition timing control for an internal combustion engine of the type having a combustion chamber, a rotating crankshaft and ignition apparatus for the combustion chamber comprising, in combination: means responsive to combustion chamber pressure to generate signals for a combustion event indicating combustion pressure and motored pressure at a first predetermined crankshaft rotational angle during combustion and at a second predetermined crankshaft rotational angle at substantially complete combustion;

means effective to compute, from the signals, first and second pressure ratios of combustion pressure to motored pressure at the first and second crankshaft rotational angles, respectively; and

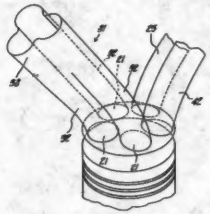
means responsive to the last means to adjust the ignition timing to maintain a predetermined ratio between the first and second pressure ratios each decreased by one, whereby combustion timing is controlled in closed loop to an MBT value.

4,622,940

PORTING ARRANGEMENT FOR INTERNAL COMBUSTION ENGINE

Masaaki Yoshikawa, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Mar. 14, 1985, Ser. No. 711,978
Claims priority, application Japan, Mar. 15, 1984, 59-49899
Int. Cl.[4] F02B *15/00*
U.S. Cl. 123—432 4 Claims



1. A valve and porting arrangement for the combustion chamber of a four-cycle internal combustion engine having at least three separate valve seats communicating with said combustion chamber, valve means for controlling the flow through said valve seats, and at least three passages extending separately from respective of said valve seats, said passages merging smoothly into a single passage extending to and having only a single inlet opening formed on an outer face of the component of the engine in which said passages are formed, said single passages having a generally symmetrical, non-circular configuration.

4,622,941

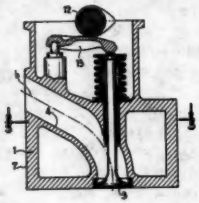
CYLINDER-HEAD UNIT FOR AN INTERNAL COMBUSTION ENGINE HAVING THREE VALVES

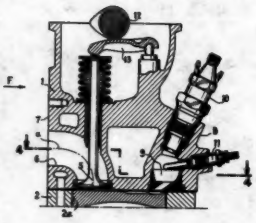
Maurice Le Creurer, Taverny, and Joseph Behar, Bezons, both of France, assignors to Automobiles Peugeot, Paris and Automobiles Citroen, Neuilly-sur-Seine, both of, France

Filed Mar. 25, 1985, Ser. No. 715,468
Claims priority, application France, Mar. 27, 1984, 84 04761
Int. Cl.[4] F02B *15/00*
U.S. Cl. 123—432 3 Claims

1. A cylinder-head unit for an internal combustion engine cylinder block having a plurality of cylinders having axes which are contained in a longitudinal plane, the cylinder-head unit comprising a cylinder-head having a lateral side and a lower surface for fixing to the cylinder block, two inlet valves and an exhaust valve for each cylinder, inlet pipes combined with respective inlet valves, and an exhaust pipe combined with the exhaust valve and having a mean line in a diametrical plane of the respective cylinder, which diametrical plane is substantially perpendicular to said longitudinal plane, the inlet pipes being disposed symmetrically with each other relative to said diametrical plane, the inlet pipes opening onto said lateral side of the cylinder-head along a common level and the exhaust pipe opening onto said lateral side at a level below the level of the inlet pipes and above said lower surface of the cylinder-head, said cylinder-head unit further comprising a

single overhead camshaft disposed at equal distances from planes parallel to said longitudinal plane and containing said





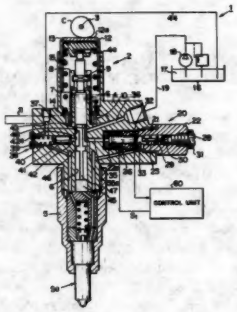
inlet valves and said exhaust valve, and identical followers cooperative with said cam-shaft for actuating all the valves.

4,622,942

FUEL INJECTION APPARATUS FOR INTERNAL COMBUSTION ENGINES

Shinya Nozaki; Keiichi Yamada, and Takeo Kushida, all of Higashimatsuyama, Japan, assignors to Diesel Kiki Co., Ltd., Japan

Filed Dec. 30, 1985, Ser. No. 814,500
Claims priority, application Japan, Jan. 4, 1985, 60-7
Int. Cl.[4] F02M *39/00*
U.S. Cl. 123—446 **12 Claims**



1. A fuel injection apparatus including a fuel injection pump which is adapted to carry out fuel intake, fuel pressurization, fuel injection and draining of cut-off fuel in accordance with the reciprocal movement of a plunger driven in synchronization with the rotational operation of an internal combustion engine, said apparatus comprising:

a first storing means for temporarily storing cut-off fuel drained at the same time of the termination of the fuel injection;

a second storing means of changeable volume for temporarily storing fuel for intake, said second storing means having a movable member which is movable in response to the quantity of fuel introduced therein;

a detecting means for producing a detection signal relating to the amount of fuel stored in said second storing means;

a clamping means responsive to an electric signal for clamping said movable member;

a signal producing means for producing at least one condition signal relating to the operating condition of said internal combustion engine;

means responsive to at least one condition signal for producing a target signal relating to the optimum amount of fuel injection at each instant;

a first means for introducing fuel supplied into said fuel injection pump into said second storing means when said plunger is at a predetermined first timing;

a control signal generating means responsive to said detection and target signals for generating a control signal for driving said clamping means so as to store a desired amount of fuel in said second storing means; and

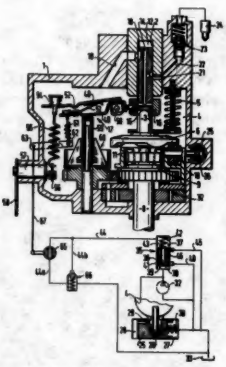
a second means for introducing fuel stored in said first and second storing means into a high pressure chamber of said fuel injection pump at a predetermined second timing before the fuel pressurization operation by said plunger is carried out.

4,622,943

FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

Wolfgang Braun, Ditzingen, and Karl Konrath, Ludwigsburg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 22, 1985, Ser. No. 725,711
Claims priority, application Fed. Rep. of Germany, May 18, 1984, 3418437
Int. Cl.[4] F02M *39/00*
U.S. Cl. 123—502 **5 Claims**



1. A fuel injection pump for internal combustion engines comprising a housing, a suction chamber in said housing, a pump piston, a face cam disk and a roller means in said housing for simultaneously reciprocating and rotating said pump piston, an injection adjuster means for adjusting said roller means to control the instant at which a supply stroke of said piston begins, said injection adjuster means including an injection adjuster piston, a first work chamber at one end of said injection adjuster piston which communicates with said suction chamber via a throttle in said injection adjuster piston, a pressure control valve, said pressure control valve including a movable wall acted upon on one end by a restoring force in a spring chamber and on its opposite end by fluid pressure in a second work chamber, a fuel feed pump driven in synchronism with said fuel injection pump, said fuel feed pump including a

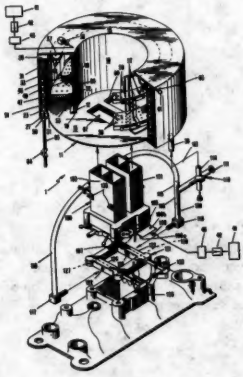
pressure side which communicates with said second work chamber of said pressure control valve and said suction chamber, said movable wall of said pressure control valve adapted to control a discharge opening to a first relief line and a second relief line connected to said spring chamber, said spring chamber arranged to communicate via a throttle restriction with said pressure side of said feed pump and via a third relief line with a fuel supply container, said third relief line arranged to communicate with a first pressure limiting valve in a first branch line and a second pressure limiting valve located in a second branch line, said first pressure limiting valve mechanically coupled with an adjustable element which is coupled with one end of an idling spring with the opposite end of said idling spring coupled with a governor lever of said fuel injection pump, whereby in a closed position of said first pressure limiting valve the biasing of said idling spring is increased.

4,622,944

FUEL EVAPORATION APPARATUS AND METHOD

Gregory Earl, 4005 Saul Rd., Kensington, Md. 20895

Continuation-in-part of Ser. No. 639,315, Aug. 10, 1984, Pat. No. 4,538,583. This application Aug. 1, 1985, Ser. No. 761,170
The portion of the term of this patent subsequent to Sep. 3, 2002, has been disclaimed.
Int. Cl.[4] F02M *31/02*
U.S. Cl. 123—557 **12 Claims.**



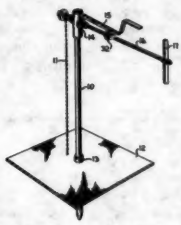
1. An evaporator apparatus for use in the fuel supply system of an internal combustion engine, comprising:
(a) housing means including an opening closed by removable cover means;
(b) inlet means for admission of fuel to chamber means, said inlet means comprising pore means provided at spaced locations about said chamber means;
(c) thermal disc means mounted in said chamber means, said thermal disc means being controllably heated whereby fuel from said inlet means impinging upon said thermal disc means is vaporized, said thermal disc means including a plruality of holes each extending completely therethrough;
(d) outlet means for evacuating vaporized fuel from said chamber means; and
(e) said cover means defining a trough having an inlet port connectable to a supply of fuel, said pore means communicating said trough with said chamber means.

4,622,945

ELEVATABLE COOKING DEVICE

John A. Glitten, 323 N. Nettleton, Bonner Springs, Kans. 66012

Filed Sep. 23, 1985, Ser. No. 778,899
Int. Cl.[4] F24B *3/00*
U.S. Cl. 126—25 A **7 Claims**



1. A grill assembly comprising, in combination:
(1) an elongate, normally vertical supporting stake of substantially uniform cross-sectional size and shape throughout the substantial upper portion of its length,
(2) an openwork grill normally mounted on said stake at right angles thereto in a position substantially parallel to the supporting level ground,
(3) a first annular collar secured within the periphery of said grill in normally vertical orientation and of sufficient inside diameter for friction sliding fit on the outer surface of said stake,
(4) an elongate, normally horizontal threaded rod of substantially uniform cross-section in its substantial entire length,
(5) a handle of insulating material secured to said threaded rod adjacent to one end of said rod,
(6) a chain having one end thereof fixed adjacent to the other end of said rod, the other end of said chain connected to said grill,
(7) a slotted ring fixed to said threaded rod on the handle side of the latter,
(8) a second annular collar mounted on the upper end of said stake, said collar provided with suitable size, opposed openings therethrough to permit the mounting and extension of said rod thereon and therethrough, said collar openings not threadably engageable with said rod,
(9) means on said threaded rod cooperating between said second annular collar and those portions of the threaded rod adjacent the second collar on each side thereof:
(i) to cause a portion of the threaded rod to continuously overlie the top end of said stake,
(ii) to support said second collar, said rod and attachments to said second collar with respect to the top end of said stake and
(iii) to permit the rotation of said rod in said collar openings to wind up and down the chain thereby to raise and lower said grill,
(10) a locking bar pivotally mounted and secured at one end on said second collar and operative to pivot in a vertical plane parallel to the axis of said rod in such manner so as to be able to engage and disengage the slots in said slotted ring, thereby to vertically fix the position of said grill with respect to said stake.

4,622,946

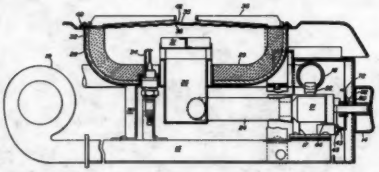
JET IMPINGEMENT/RADIATION GAS-FIRED COOKING RANGE

James R. Hurley, East Weymouth; Joseph R. Birkner, West Peabody, and Maurice Nunes, Arlington, all of Mass., assignors to Thermo Electron Corporation, Waltham, Mass.

Filed May 16, 1985, Ser. No. 734,932
Int. Cl.[4] F24C *3/00*
U.S. Cl. 126—39 E **12 Claims**

1. A gas-fired cooking range comprising at least one burner,

a valving device connected to said burner, an air plenum having an air outlet connected to said valving device, means for supplying pressurized air to said air plenum, a fuel gas manifold having a gas outlet connected to said valving device, said valving device being operable to form a pressurized mixture of fuel gas and air, adjusting means connected to each said valving device to control the rate of flow of said mixture to said burner connected to said valving device, means for maintaining predetermined proportions of fuel gas and air in said mixture at all rates of flow of said mixture set by said adjusting means, support means for supporting a cooking utensil above



said burner, and a jet plate positioned between said support means and said burner, said jet plate having a domed, convex-upward shape and including a plurality of protrusions extending upwardly towards said support means and having a jet hole in the top of each said protrusion, said burner operable to direct combustion cases towards said jet plate to heat said jet plate to a temperature of up to about 1500° F. and to cause convective jets of gases to formed by said jet holes, said jet plate thereby transferring heat energy to said utensil both by radiation and by impact of said convective jets on the bottom surface of said vessel.

4,622,947

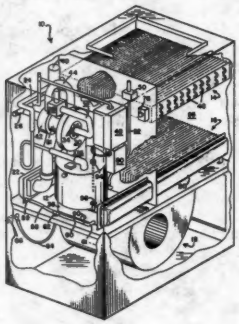
RECUPERATIVE FURNACE

Herbert G. Hays, Amana, and Warren W. Kuipers, Cedar Rapids, both of Iowa, assignors to Amana Refrigeration, Inc., Amana, Iowa

Division of Ser. No. 456,172, Jan. 6, 1983, Pat. No. 4,449,511. This application Mar. 16, 1984, Ser. No. 576,094

Int. Cl.[4] F24H *3/02*

U.S. Cl. 126—110 R **2 Claims**



1. A forced air furnace, comprising:

means for combusting fuel;

an air duct;

a first heat exchanger coupled to said air duct, said first heat exchanger having at least one conduit coupled to said combusting means;

said conduit having a fluid flowing therein for transferring heat from said combusting means to said first heat exchanger;

a second heat exchanger positioned in said air duct below said first heat exchanger, said second heat exchanger receiving said combustion products directly from said combusting means;

an air blower having its output coupled upward to said second heat exchanger for preheating said air from thermal transfer from said combustion products and from heat of condensation given off by a portion of said combustion products condensing in said second heat exchanger; and

said preheated air from said second heat exchanger being coupled upward to said first heat exchanger for further heating said preheated air from thermal transfer from said first heat exchanger.

4,622,948

COOKWARE HAVING INTEGRALLY FORMED NATURAL STONE BOTTOMS AND METHOD OF MANUFACTURING THE SAME

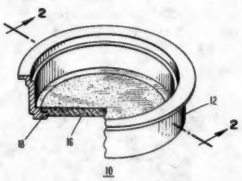
Chang H. Oh, Seoul, Rep. of Korea, assignor to J & L Importers, Inc., King of Prussia, Pa.

Division of Ser. No. 666,820, Oct. 31, 1984, Pat. No. 4,538,590. This application Mar. 4, 1985, Ser. No. 707,860

Claims priority, application Rep. of Korea, May 22, 1984, 4702

Int. Cl.[4] A47J *27/00*

U.S. Cl. 126—390 **13 Claims**



1. A cooking utensil comprising:

a metal sidewall; and

a bottom portion formed of natural stone, said bottom portion mating with and joined to said sidewall to form a liquid-tight, partially enclosed receptacle capable of containing liquids therein, said natural stone bottom portion of said receptacle having a coefficient of thermal expansion substantially equal to the coefficient of thermal expansion of said metal sidewall.

4,622,949

FLOATING SOLAR POND AND ASSOCIATED POWER PLANT

Yona Yahalom, Rehovot, Israel, assignor to Solmat Systems, Ltd., Yavne, Israel

Continuation of Ser. No. 415,905, Sep. 8, 1982, abandoned. This application Jun. 19, 1984, Ser. No. 622,243

Claims priority, application Israel, Sep. 16, 1981, 63853

Int. Cl.[4] F24J *2/42*

U.S. Cl. 126—415 **26 Claims**

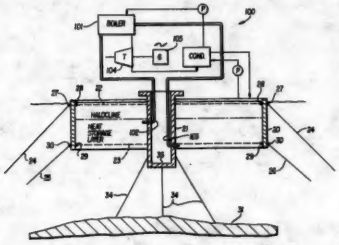
1. A solar pond comprising:

(a) a reservoir of an aqueous solution having a predetermined substantially uniform density;

(b) a hull for enclosing a body of solution and segregating it from the reservoir; and

(c) the enclosed solution including a multi-layer region comprising a halocline and a heat storage layer, said solution having an average density less than the density of the solution in the reservoir for causing the surface of the

enclosed solution to be higher than the surface of the reservoir whereby a normal pressure is exerted on the hull



in a direction outwardly therefrom and the hull is under tensile stress.

4,622,950

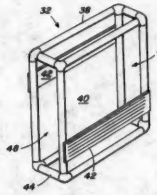
SOLAMAR II

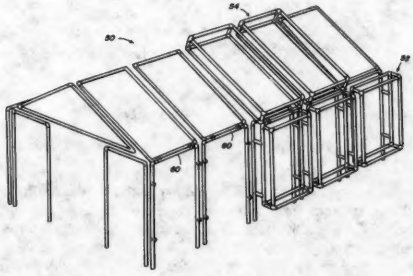
George Greenbaum, 6770 E. Carondelet Dr. #118, Tucson, Ariz. 85710

Filed Jan. 29, 1985, Ser. No. 696,164

Int. Cl.[4] F24C *3/00*

U.S. Cl. 126—428 **22 Claims**





1. A shelter which comprises:

a plurality of wall panels arrayed in side-by-side relationship, ech of said wall panels having upper ends and lower ends;

a plurality of roof panels joined to the upper ends of the wall panels and to one another, the wall and roof panels defining an enclosed environment;

at least one of said panels comprising a frame, a film secured about the frame to form an outer skin and an inner skin which skins define an insulation zone therebetween; and

one of said skins comprised of at least two distinct films a carrier film and a metallized barrier film, said barrier film supported by said carrier film and which barrier film functions as a filter in reference to the transmission of solar energy.

4,622,951

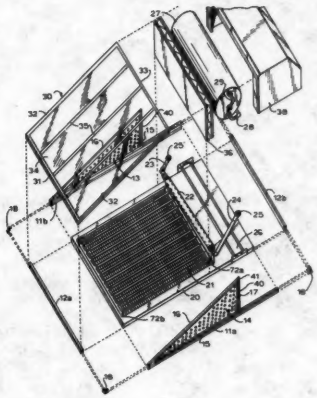
SOLAR COLLECTOR ASSEMBLY AND KIT

Randy L. Matzkanin, Coral Gables, Fla., assignor to Alternative Energy Resources, El Paso, Tex.

Filed May 28, 1985, Ser. No. 738,354

Int. Cl.[4] F24J *2/56*

U.S. Cl. 126—450 **21 Claims**



1. A method of installing a solar collector water heater comprising the steps of:

assembling a main frame over a base board by sliding corner keys into ends of a pair of side rails and a pair of end rails, said base board having mounted thereon a solar absorber plate including a heat exchanger at one end of the absorber plate with couplings for connection to a tank;

installing a water tank onto said frame, said tank having a make-up water inlet, a heated-water outlet, a tank-to-heat-exchanger coupling and a heat-exchanger-to-tank coupling;

connecting said make-up water inlet to a source of water, said heated water outlet to an inlet of a hot water system, and said tank-to-heat-exchanger coupling and said heat-exchanger-to-tank coupling to the associated couplings of said heat exchanger;

assembling onto said main frame at least one glazing panel formed of a panel frame and a sheet of transparent material stretched onto said panel frame, the latter including rail members secured to one another, at least some of the rail members having integral snap-fit structure thereon cooperating with mating structure formed integrally on at least some of the rails of the main frame, said assembling including sliding at least one rail member of said panel frame onto a corresponding rail of the main frame so that the snap-fit and mating structures interengage one another to hold said glazing panel securely in place over said absorber plate.

4,622,952

CANCER TREATMENT METHOD

Robert T. Gordon, 4936 W. Estes, Skokie, Cook County, Ill. 60077

Continuation of Ser. No. 457,715, Jan. 13, 1983, abandoned, which is a continuation of Ser. No. 96,413, Nov. 21, 1979, abandoned. This application Dec. 14, 1984, Ser. No. 681,697

Int. Cl.[4] A61N *1/42*

U.S. Cl. 128—1.3 **17 Claims**

1. A process for the treatment of cancer cells in a subject's living tissue comprising the steps of:

determining a resonant absorption frequency of said cancer cells,

generating an electromagnetic field,

turning said electromagnetic field to said absorption frequency of said cancer cells, and

exposing the subject to said tuned field to achieve biophysical alteration in said cancer cells' intracellular structures, said biophysical alteration including the stimulation of intracellular production of interferon.

4,622,953

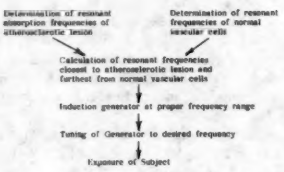
PROCESS FOR THE TREATMENT OF ATHEROSCLEROTIC LESIONS

Robert T. Gordon, 4936 W. Estes, Skokie, Ill. 60077

Division of Ser. No. 681,697, Dec. 14, 1984, which is a continuation of Ser. No. 457,715, Jan. 13, 1983, abandoned, which is a continuation of Ser. No. 96,413, Nov. 21, 1979, abandoned. This application Sep. 30, 1985, Ser. No. 781,782

Int. Cl.[4] A61N *1/42*

U.S. Cl. 128—1.3 **20 Claims**


Determination of resonant absorption frequencies of atherosclerotic lesion
Determination of resonant frequencies of normal vascular cells
Calculation of resonant frequencies closest to atherosclerotic lesion and furthest from normal vascular cells
Induction generator at proper frequency range
Tuning of Generator to desired frequency
Exposure of Subject

1. A process for the treatment of atherosclerotic lesions comprising the steps of:

determining the resonant absorption frequencies of said lesions,

generating an electromagnetic field,

tuning said electromagnetic field to said absorption frequencies of said lesions,

exposing the subject to said tuned field to achieve biophysical alteration in said lesions' intracellular structures, and

said biophysical alteration including the stimulation of intracellular production of interferon.

4,622,954

ENDOSCOPE HAVING A PLATE-LIKE IMAGE SENSOR FOR FORMING IMAGES

Satoshi Arakawa; Makoto Toyota, and Fumitaka Takeshita, all of Oomiya, Japan, assignors to Fuji Photo Optical Co., Ltd., Japan

Filed May 6, 1985, Ser. No. 730,998

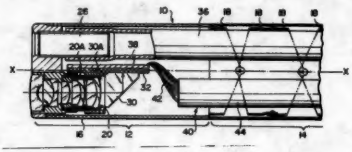
Claims priority, application Japan, May 15, 1984, 59-97233; May 15, 1984, 59-97234; May 18, 1984, 59-72790

Int. Cl.[4] A61B *1/04*

U.S. Cl. 128—6 **5 Claims**

1. An endoscope having in the forward end portion of its insertable section into a cavity of a living body, an image sensor for generating a video signal which in turn is transmitted to a television display to be vizualized thereon as a television picture, said endoscope comprising:

a plate like image sensor placed in a plane containing the longitudinal axis of said forward end portion of endoscope;



a forceps channel disposed in one of spaces into which the interior of said forward end portion is divided by said plate like image sensor; and

an objective lens assembly disposed in the other of said spaces.

4,622,955

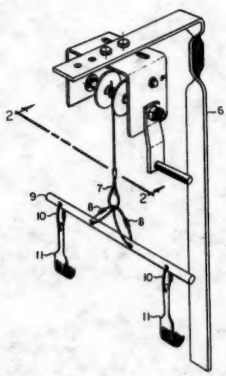
SURGICAL RETRACTOR FOR DISSECTION OF INTERNAL MAMMARY ARTERY

Mehdi Fakhrai, 1242 Barrington Ave. #201, Los Angeles, Calif. 90025

Filed Sep. 5, 1985, Ser. No. 772,997

Int. Cl.[4] A61B *17/02*

U.S. Cl. 128—20 **1 Claim**

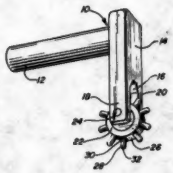


1. A surgical retractor device particularly adapted for use in thoracic procedures where it is desired to urge the sternum both laterally outwardly and vertically upwardly such as for mammary artery dissection, said device comprising a vertically extending member having a lower end secured relative to the patient support laterally outwardly of such patient and an upper end vertically above the position of the sternum of such patient, an elongate rigid member extending generally parallel to the sternum, a pair of spaced apart hooks having one end flexibly secured to said rigid member at spaced apart points and having a hook means on the distal and adapted for attachment over the split sternum, flexible retraction means having one end secured to said rigid member between said points and the other end operably secured to said vertically extending member, and means for retracting said flexible means away from said sternum by crank mechanism that is secured to said elongate rigid member and operates by turning handle to crank and hold at desired position toward said vertically extending member whereby said split sternum section is urged both vertically upwardly and laterally outwardly by both of said spaced apart hooks carried by said rigid member.

4,622,956
REFLEX STIMULATOR

David A. Nesheim, 1718 Broadway, Rockford, Ill. 51108

Continuation-in-part of Ser. No. 371,290, Apr. 23, 1982, abandoned. This application Oct. 28, 1985, Ser. No. 792,067
Int. Cl.[4] A61H *15/00*
U.S. Cl. 128—57 7 Claims

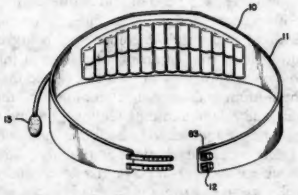


1. A reflex stimulator for applying a localized force to a nerve ending at a reflex point in a series of points on a human body comprising: a handle providing a means to allow an operator to grasp the reflex stimulator and manipulate the stimulator while applying a force to a human body with the reflex stimulator, a hub rotatably connected to the handle, said hub having an outer periphery and an axis of rotation within its outer periphery, and a plurality of elongated teeth mounted on the outer periphery of the hub and extending radially outward from the hub, each of said teeth having a free end adapted for engagement with a human body to apply a localized force to a selected portion of the human body, each of said teeth having its free end tapered to a substantially flat end, said flat end having a cross sectional area less than one-fourth the cross sectional area of the respective tooth adjacent to the hub, said teeth being equiangularly spaced about the outer periphery of the hub, said teeth being arranged in a plane substantially perpendicular to the axis of rotation of the hub, each of said teeth being spaced from adjacent teeth a distance to allow a given tooth to depress the skin of a human body to have the given tooth's free end stimulate a selected reflex point on the human body while the teeth on either side of the given tooth may engage the skin surrounding the skin engaged by the given tooth without reducing substantially the force applied to the selected reflex point by the given tooth, and movement of the handle relative to the body causes the hub to rotate and causes another of the teeth to engage another point on the human body to apply a localized force to the other point of the human body for applying a localized force to each of a plurality of points on the human body in a selected zone to insure applications of localized force to a selected reflex point.

4,622,957
THERAPEUTIC CORSET

James D. Curlee, 1115 Lisburn Rd., R.D. 3, Mechanicsburg, Pa. 17055

Filed Jul. 3, 1984, Ser. No. 627,462
Int. Cl.[4] A61F *5/03, 5/34*
U.S. Cl. 128—78 13 Claims



1. A therapeutic corset-type appliance to be worn by a person about the torso of the human body to effectively treat the sacrum, lumbar, and thoracic regions of the person's back, comprising:

(a) belt means, having inside and outside surfaces, for securing said therapeutic appliance about said torso portion of said person's body;

(b) means for mechanically releasing spasm muscle tissue and applying pressurized forces to the sacrum, lumbar, and thoracic regions including a semi-rigid support surface and an inflatable bladder means;

(c) said support surface having inside and outside surfaces, said outside surface of said support surface being secured to said inside surface of said belt means, said support surface having a vertical height extending from and between said sacrum, lumbar and thoracic regions and having an around-the-body width encompassing the sacrum, lumbar and thoracic regions;

(d) said inflatable bladder means having inside and outside surfaces, said outside surface of said bladder means being secured to said inside surface of said support surface so that said cells are nested within said support surface when said belt means is attached to the person's body, said inflatable bladder means being comprised of material possessing a low coefficient of elasticity relative to the bendability of the semi-rigid support surface and being divided into a series of laterally spaced, vertically extending, separate and distinct, yet fluidically interconnected, inflatable cells;

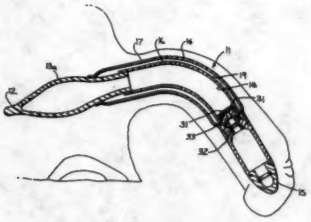
(e) means for causing said belt means and said support surface to bow in an arcuate manner about a vertical axis paralliel to the height axis of said person's body upon inflation of said cells, said means for causing consisting of the low coefficient of elasticity of said bladder means compared to the bendability of said support surface and said nesting of said cells;

(f) means secured to said belt means, and fluidically connected to said inflatable bladder means, for inflating said inflatable bladder means.

4,622,958
PENILE IMPLANT WITH ACCUMULATOR

Roy P. Finney, Spring Hill, Fla., assignor to Medical Engineering Corporation, Racine, Wis.

Filed Dec. 12, 1984, Ser. No. 680,746
Int. Cl.[4] A61F *5/00*
U.S. Cl. 128—79 2 Claims



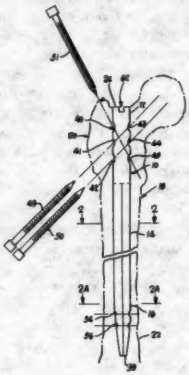
1. In an inflatable penile implant comprising a generally cylindrical body containing a hydraulic system which includes a non-distensible pressure chamber, a reservoir and a pump for transferring pressurizing fluid from the reservoir to the pressure chamber, the improvement which comprises said non-distensible pressure chamber having a minor portion thereof a wall which expands outwardly of said pressure chamber to increase the volume of the pressure chamber when the normal working pressure of the hydraulic system of the implant has been exceeded thereby absorbing and compensting for any increased pressures which might otherwise damage the hydraulic system.

4,622,959

MULTI-USE FEMORAL INTRAMEDULLARY NAIL

Randall E. Marcus, 837 Nashville Ave., New Orleans, La. 70115

Filed Mar. 5, 1985, Ser. No. 708,393
Int. Cl.[4] A61F 5/04
U.S. Cl. 128—92 YZ **14 Claims**



1. An intramedullary nail for use in fractures of the femur comprising, an elongated unitary body having a head, an intermediate body portion, and a distal tip, said body having an axial opening therein extending through said head and into said intermediate body portion, said nail being insertable into the medullary canal of a femur to a position in which said distal tip is in the distal femur region and said head is in the intertrochanteric femur region, a first transverse screw receiving opening in said body near said distal tip, a second screw receiving opening in said head having its axis within the femoral neck, and a third screw receiving opening in said head having an axis generally transverse to the axis of the femoral neck and crossing the axis of the second opening, means for securing an inserting tool to said head for inserting the nail in a femur, and means on said head defining a line having a predetermined fixed angular relation to the axis of each of said screw receiving openings for accurately locating a guide of a tool circumferentially and axially of the nail in precise axial alignment with any of said openings.

4,622,960

INSTRUMENT FOR WIRE MANIPULATION IN BONE SURGERY

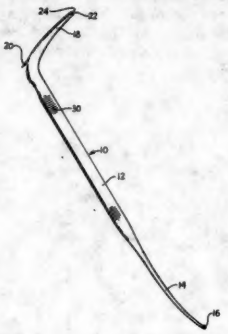
John W. Tam, 922 Fountain Springs La., Glendora, Calif. 91740

Filed Jun. 7, 1985, Ser. No. 742,518
Int. Cl.[4] A61F 5/04
U.S. Cl. 128—92 VK **19 Claims**

1. A surgical instrument for manipulation of securement wire in small bone surgery wherein adjacent bone sections are drilled to define passages for extension of the wire therethrough, said surgical instrument comprising:

an elongated body section,

a first end section having an end portion defining a generally J-shaped hook for engagement with the wire for withdrawal of the wire through one of the passages, and



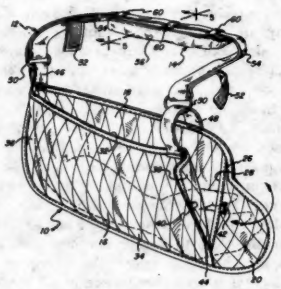
a second end section having an end portion defining a notch for engaging wire end portions for manual urging of the end portions into one of the passages.

4,622,961

ARM SLING WITH MITTEN POCKET

Margery Christensen, 121 Rosewood Dr., Bristol, Conn. 06010

Filed Apr. 4, 1985, Ser. No. 720,080
Int. Cl.[4] A61F 5/40
U.S. Cl. 128—94 **8 Claims**



1. An arm sling comprised of a cradle member and attached strap means, said cradle member having a sleeve section and, at the forward end thereof, an integral mitt section, said sleeve and mitt sections being dimensioned and configured, respectively, to substantially receive the forearm and hand of the wearer, each of said sections beign comprised of a pair of substantially coextensive side panel potions, said strap means being attached to both of said panel portions of said sleeve section adjacent said forward end thereof, as well as being attached adjacent the rearward end of said cradle member, said panel portions of said mitt section being joined to one another about the exterior of said cradle member, and being disconnected therewithin to permit insertion of the hand into said mitt section, said panel portions of said sleeve section being joined along the bottom and disconnected along the top, said panel portions of said sleeve and mitt sections, on one side of said cradle member, being joined to one another, and said panel portions of said sleeve and mitt sections on the other side being disconnected from one another to permit facile displacemnt of said sleeve panel portion one other side, relative to said sleeve panel portion on one side, with said strap means so attached, said sleeve panel portion on other side having disengageable

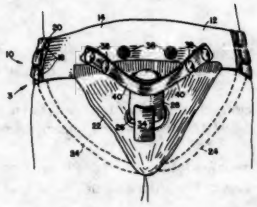
means thereon for temporarily affixing them to one another, the construction of said cradle member permitting folding of said mitt section from an extended position to an inward position within said sleeve section by relative displacement of said sleeve and mitt panel portions on said other side, said cradle member thereby being adapted for facile conversion for enveloping the forearm and hand of the wearer, in said extended position of said mitt section, or alternatively, for enveloping substantially only the forearm in said inward position thereof.

4,622,962

PENILE SUPPORT

Robert D. Kauffman, 13 Horseshoe Dr., Annville, Pa. 17003

Filed Apr. 18, 1985, Ser. No. 724,759
Int. Cl.[4] A61F *5/40*
U.S. Cl. 128—158 **4 Claims**



1. A penile support comprising a waistband, a scrotum pouch extending downwardly from the front of the waistband, hip straps joining the bottom of the pouch to the back of the waistband, an opening extending through the center of the pouch, a penile casing extending across the pouch when open, a plurality of adjustable, releasable and resealable overlapping fastening means located along the ends of the casing when the casing is closed, each fastening means including a pair of complementary interengagable surfaces with one surface on the outside of one end of the casing and the other surface on the inside of the other end of the casing whereby the casing may be adjustably closed around a penis extending outwardly through the opening, a single connection between the casing and the pouch consisting of a hinge strip permanently joined to one side of the casing and permanently joined to the pouch below the opening, two casing support straps joining the outside of the opposite side of the casing across from the hinge strap and removable attachment means for securing the ends of the casing support straps to spaced locations on opposite sides of the front of the waistband to hold the casing and surrounded penis in an upward position.

4,622,963

SELF-CONTAINED PORTABLE SINGLE PATIENT VENTILATOR/RESUSCITATOR

William K. Ansite, Glendale, Calif., assignor to Figgie International Inc., Willoughby, Ohio

Continuation of Ser. No. 459,405, Jan. 20, 1983, abandoned. This application Apr. 15, 1985, Ser. No. 722,440
Int. Cl.[4] A61M *16/00*
U.S. Cl. 128—203.27 **12 Claims**

1. A self-contained portable single patient ventilator/resuscitator capable of operating without attention for a period of time after its operation has commenced; said ventilator/resuscitator comprising:

power supply means capable of discharging oxygen over a period of time at a pressure sufficiently great to force oxygen into a patient's lungs, said power supply means including a chemical oxygen generator and outlet means;

delivery means extending from said outlet means and capable of causing at least a portion of said oxygen to be delivered from said outlet means to said patient, said delivery means including

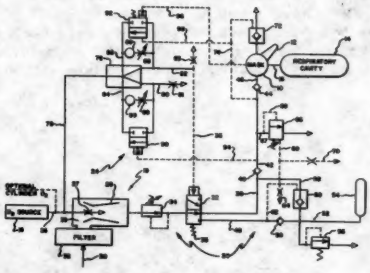
a mask,

head harness means connected to said mask and capable of holding said mask onto said patient,

suction pump means capable of being operated when receiving oxygen from the outlet means of said power supply means to cause ambient air to be drawn into said pump means, to be mixed with said oxygen within said pump means, and to be discharged from said pump means, said suction pump means including a jet orifice interconnected to said outlet means and which receives oxygen from said power supply means, a suction portion which receives ambient air during operation of said power supply means, and a discharge portion through which mixed oxygen and ambient air are discharged during operation of said power supply means,

two position flow directing means capable of being shifted between inspiratory and expiratory positions, and

fluid line means interconnected with the two position flow directing means and capable of delivering mixed oxygen and ambient air from the discharge portion of the



suction pump means to said mask when the two position flow directing means is in its inspiratory position;

fluid operated control means operated by the oxygen discharged by said power supply means and capable of causing said two position flow directing means to be shifted between inspiratory and expiratory positions and to be maintained in each of said positions for first and second limited time periods, a portion of said oxygen being delivered to said mask when the two position flow directing means is in said inspiratory position;

further fluid line means interconnecting said fluid operated control means with the outlet means of said power supply means and said two position flow directing means; and

wherein said delivery means further includes accumulator means interconnected with the two position flow directing means, said accumulator means and the two position flow directing means being capable of causing at least a portion of the oxygen discharged by the power supply means to be delivered to the accumulator means when the two position flow directing means is in its expiratory position and also being capable of causing the accumulated oxygen to be delivered to a patient when the two position flow directing means is in its inspiratory position.

4,622,964

VALVE FOR BREATHING DEVICE

Stephen D. Flynn, Oakville, Canada, assignor to O-Two Systems International Inc., Mississauga, Canada

Continuation-in-part of Ser. No. 536,539, Sep. 28, 1983, abandoned. This application Mar. 5, 1985, Ser. No. 708,544
Int. Cl.[4] A62B *7/04*
U.S. Cl. 128—205.24 **8 Claims**

1. A breathing valve for use in association with breathing

devices for the administration of gases to a patient, and comprising:

a valve chamber having an upstream end connectable to a supply of gas, and having a downstream end connectable to a breathing device, there being respective upstream and downstream openings in said chamber, whereby gas can be admitted through said upstream opening, and can be administered through said downstream opening in a first direction to said breathing device;

a tubular downstream connection member defining said downstream opening, and having upstream and downstream ends;

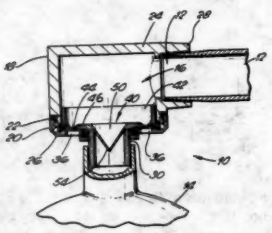
valve seating surfaces around said upstream end of said tubular connecting member;

gas flow passages in said chamber adjacent said upstream end of said tubular connection member whereby exhaled gases may pass from said breathing device through said tubular connection member in a second direction, and may be discharged to atmosphere, and through which atmospheric air may be inducted into said breathing device in a third direction;

a single integral flow control member extending across said chamber between said upstream and downstream ends, said flow control member in turn comprising:

a circular gas flow port located along the central axis of said flow control member;

one-way valve means incorporated in and forming an integral part of said flow control member in registration with said gas flow port whereby gas may flow from said chamber through said gas flow port and said valve means into said tubular connection member, said valve means preventing return flow in the oppositve direction through said valve means;



a thick, closure ring incorporated in and forming an integral part of said flow control member surrounding and defining said gas flow port and movable into and out of sealing engagement with said valve seating surfaces, whereby said closure ring will prevent communication between said tubular connection member and said gas flow passages upon inhalation of gas from said upstream end of said chamber;

said closure ring being movable away from said seating surfaces upon exhalation, thereby unsealing the same and allowing gas flow in said second direction through said tubular connection member and out of said gas flow passages;

peripheral mounting means formed integrally with said flow control member for securing the flow control member to said chamber; and,

an annular pressure responsive thin, flexible diaphragm wall incorporated in and forming an integral part of said flow control member located between said peripheral mounting means and said thick closure ring and formed in section into a generally concave/convex annular fold with the convex profile directed towards said gas flow passages, and responsive to obstruction of gas flow into said chamber from said upstream end, and further responsive to inspiratory effort by a patient through said tubular connection member whereby to respond to the pressure difference created thereby and cause said closure ring to move away from said seating surfaces, thereby permitting inward air flow through said gas flow passages in said third direction into said tubular connection member for inhalation through said breathing device.

4,622,965

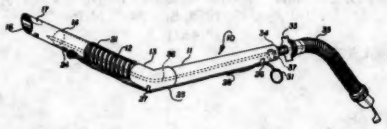
ENDOTRACHEAL TUBE

Edward Teeple, 641 Ridgefield Ave., Mt. Lebanon, Pa. 15216

Filed Aug. 30, 1984, Ser. No. 645,747

Int. Cl.[4] A61M *16/00*

U.S. Cl. 128—207.14 **5 Claims**



1. A metal endotracheal tube adapted for use in laser beam surgery comprising:

a. a main elongated tubular member having an anterior portion angularly offset therefrom and terminating in an open end;

b. a second metallic tubular member having one end portion positioned over the anterior portion of said main tubular member;

c. stop means positioned on the anterior portion adjacent said angular offset;

d. biasing means positioned between said stop means and the telescopic end of said second tubular member for biasing said second member away from said main member; and

e. control means operably connected to said second tubular member from moving said member with respect to said biasing means.

4,622,966

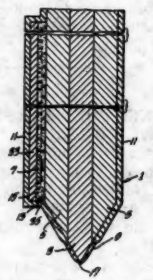
SURGICAL CUTTING DEVICE

Robert W. Beard, Placerville, Calif., assignor to Abbott Laboratories, North Chicago, Ill.

Division of Ser. No. 278,955, Jun. 30, 1981, which is a continuation-in-part of Ser. No. 201,603, Oct. 28, 1980. This application Jul. 16, 1984, Ser. No. 631,536

Int. Cl.[4] A61B *17/36*

U.S. Cl. 128—303.14 **7 Claims**



1. A surgical instrument capable of being heated to a predetermined temperature within a predetermined temperature range, comprising:

a blade body having

a steel substrate with a cutting edge and

a copper composition having a yield strength of at least 25,000 p.s.i. laminated to said steel substrate, but not ex-

tending so as to cover the cutting edge of said steel substrate;

a hollow cutting instrument body which engages the blade body;

heater means passing through said hollow cutting instrument body and directly interfacing and secured at its proximal end to said blade body and at its distal end to said cutting instrument body; and

non-stick means coated on said cutting edge and at least a portion of the balance of said blade body.

4,622,967

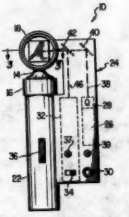
AURICULAR INSTRUMENT

Ronald A. Schachar, P.O. Box 124, Denison, Tex. 75020

Filed Sep. 13, 1984, Ser. No. 650,118

Int. Cl.[4] A61B *17/36*

U.S. Cl. 128—303.15 **4 Claims**



1. A handheld, self-contained auricular instrument for the therapy of otitis media, comprising:

a hollow eyepiece having an ear probe at one end insertable into a patient's ear and having a single axis for enabling the unobstructed viewing of a patient's tympanic membrane;

a source of visible light harmless to body tissue;

optical means associated with said light source for directing visible light therefrom along said axis through said ear probe to the patient's tympanic membrane;

a Q-switched laser for automatically providing output pulses of light explosive to the tympanic membrane, said laser being arranged to use said optical means jointly with said light source to impinge on a target illuminated by said visible light, said output pulses being directed along said axis to said target, whereby said ear probe may be inserted in the outer ear of a patient and said explosive pulses of light used to form a hole in the patient's tympanic membrane while the progress of the hole formation is observed through said eyepiece;

a first control switch having an "on" state and an "off" state, and located on said handheld instrument for activating said source of visible light; and

a second control switch on said handheld instrument for activating said laser so that a plurality of said pulses can be output while said switch is operated.

4,622,968

INSTRUMENT FOR THE TREATMENT OF RESPIRATORY OBSTRUCTION

Peter Persson, Upsala, Sweden, assignor to Economedica Sweden AB, Upsala, Sweden

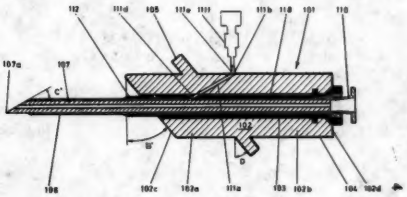
Filed Mar. 27, 1984, Ser. No. 593,879

Claims priority, application Sweden, Apr. 13, 1983, 8302061; Oct. 31, 1983, 8305978

Int. Cl.[4] A61B *17/32*; A61M *16/00*

U.S. Cl. 128—305.3 **10 Claims**

1. Instrument for providing an unobstructed airway and for giving active respiratory assistance in acute situations by percutaneous puncture of the cricothyroid membrane, comprising a body having a through-passage opening on one hand into a forward end of the body intended to be positioned against the neck of the patient and on the other hand into a rear portion of the body, the rear portion of the body comprising a tubular adapter formed integrally with the body and having standard dimensions for connecting the same to respiratory or anesthetic equipment, a tube secured coaxially within the passage in such a way that it protrudes from the forward end of the body and forms a continuation of the passage, the tube having an outer dimension smaller than the cross dimension of the passage and being stationary in an insert the outer diameter of which substantially corresponds to the cross section diameter of the passage and which is retractably positioned in the passage, the tube being intended for introduction into the trachea of the patient and being manufactured from a soft, resilient material, a puncture means retractably provided in the tube



and adapted to protrude past the outer end of the tube with its cutting point when in its fully inserted position, the puncture means having an outer diameter about equal to the inner diameter of the tube and comprising an inner passage which at least along a portion thereof has a cross section diameter not exceeding approximately 1 to 1.5 mm, a channel extending from an external orifice at the outside of the body and into the inside of the tube, and fittings of standard size being provided at least at the end of the puncture means close to the rear portion of the body, the fittings permitting an exact determination, by means of aspiration, of when the puncture means has entered the subglottic space and also permitting injection of pharmaceuticals by means of a conventional syringe.

4,622,969

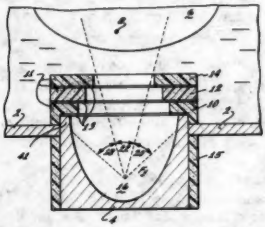
SHOCK WAVE MATCHING IN THERAPEUTIC EQUIPMENT

Bernd Forssmann, Friedrichshafen, and Christian Chaussy, Germering, both of Fed. Rep. of Germany, assignors to Dornier System GmbH, Friedrichshafen, Fed. Rep. of Germany

Filed Jun. 6, 1984, Ser. No. 617,750

Int. Cl.[4] A61B *17/22*

U.S. Cl. 128—328 **12 Claims**



1. In an apparatus for the comminution of concrements in the body of a human being which includes a source for shock waves situated in a first focal point of an ellipsoidal reflector, the apparatus to be positioned such that a second focal point of said reflector is located in the concrement to be destroyed, the improvement of a structure for matching the shock wave field produced upon production of a shock wave in the firstmen-

tioned focal point to the body of the patient, particularly the body of a child, comprising:

said reflector having a particular opening; and

an assembly which includes a plurality of concentric shock wave attenuating exchangeable rings made of foam and being removably placed at said opening and in superimposing relationship and having inner openings that decrease with axial distance of the rings from the first focal point,said rings providing restriction for shock wave emanation from the opening of the reflector and as now defined by the openings of the rings, said assembly further including a means for weight increasing, having a specific weight so that the assembly of foam rings as a whole have a specific weight larger than the specific weight of water.

4,622,970

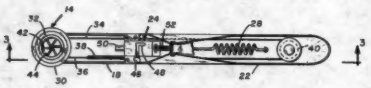
VASCULAR EVERTING INSTRUMENT

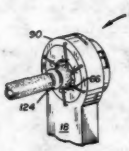
John J. Wozniak, Columbia, Md., assignor to The Johns Hopkins University, Baltimore, Md.

Filed Aug. 29, 1985, Ser. No. 770,492

Int. Cl.[4] A61B *17/08, 17/04*

U.S. Cl. 128—334 R **28 Claims**





1. A means for everting an end of a tubular body member, including a first instrument having:

a rotatable means for positioning adjacent the end of the tubular body member:

a flaring means connected to the rotatable means, for flaring the tubular body member end;

an actuation means, coupled for rotating the rotatable means such that the tubular body member is flared; and

said flaring means engaging the tubular body member end whereby as said instrument is moved longitudinally along said tubular body member while said tubular body member end is flared, said end will be everted.

4,622,971

ERRONEOUS IMPINGEMENT PROTECTIVE DEVICE FOR LASER SYSTEM

Takashi Yamamoto, and Akira Ishimori, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

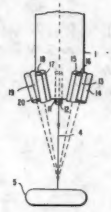
Continuation of Ser. No. 453,569, Dec. 27, 1982, abandoned. This application May 17, 1985, Ser. No. 734,830

Claims priority, application Japan, Dec. 28, 1981, 56-215818; Feb. 19, 1982, 57-26609

Int. Cl.[4] A61N *3/00*

U.S. Cl. 128—395 **3 Claims**

1. A laser light erroneous impingement protective device, comprising: a surgical laser handpiece (1) including an end portion for emitting both a surgical laser beam and a visible pilot lase beam (4), a plurality of n pairs of light detecting means (11–20) equally circumferentially spaced around said end portion of the handpiece for detecting pilot beam light directly reflected from a target to which a pilot laser beam is applied and for generating electrical outputs proportional to the magnitude of such reflected light, a plurality of distance measuring units (21–25) each including a differential comparator responsive to the outputs of one of the detecting means pairs for generating a binary "0" or "1" logic signal in response to the relative magnitude of the detecting means pair outputs indicative of the distance between said end portion of said laser emitting means and the target, an individual one of said distance measuring units being provided for each of said plurality



of pairs of light detecting means, an adder (26) for summing the binary logic signal outputs of each of the differential comparators, a majority decision distance determing unit (27) for making a final determination of an acceptable distance from the end portion of the handpiece to the target on the basis of the adder output and a predetermined threshold value less than n, and means for controlling the application of the surgical laser beam to the target in response to the output of the distance determining unit to thereby reduce activation errors due to the reflective characteristics and contours of the target surface and the angle of the handpiece.

4,622,972

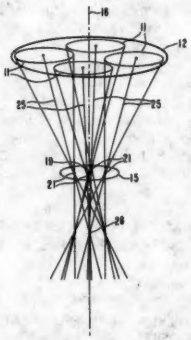
ULTRASOUND HYPERTHERMIA APPLICATOR WITH VARIABLE COHERENCE BY MULTI-SPIRAL FOCUSING

Robert H. Giebeler, Jr., Sunnyvale, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 308,924, Oct. 5, 1981, abandoned. This application Sep. 15, 1982, Ser. No. 418,136

Int. Cl.[4] A61F *7/00*

U.S. Cl. 128—399 **60 Claims**



1. A device for uniformly irradiating a target volume by an array of individually focused beams without forming outside said target volume a hot spot, said device comprising a plurality of beam transmitter elements having finite effective beam diameters and positioned at predetermined source locations about a central axis of the device, each of said transmitter

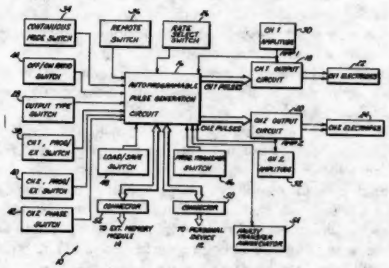
elements defining a straight beam center line and transmitting beams which are focused on said beam center line and at one of a plurality of preselected target points distributed within said volume, said beam center lines being in a mutually non-intersecting relationship, said beam center lines approaching closer to said central axis with distance toward said target volume.

4,622,973

PROGRAMMABLE FUNCTIONAL ELECTRICAL STIMULATION SYSTEM

Poonam Agarwala, New Brighton, Minn., assignor to Empi, Inc., Fridley, Minn.

Filed Jun. 15, 1984, Ser. No. 621,239
The portion of the term of this patent subsequent to Jul. 16, 2002, has been disclaimed.
Int. Cl.[4] A61N *1/36*
U.S. Cl. 128—421 **17 Claims**



1. A functional electrical stimulation (FES) system for providing an electrical output pulse train which is applied to a patient's body to cause a desired FES regimen of contraction and relaxation of muscles of the patient, the FES system including:

a clinical FES device for creating the desired FES regimen, the clinical FES device including:

means for producing a clinical device output pulse train;

means for applying the clinical device output pulse train to the patient's body;

means for selecting a program mode of operation during which the desired FES regimen is established;

means for providing an intensity control signal during the program mode;

means for controlling the intensity of the clinical device output pulse train during the program mode as a function of the intensity control signal;

means for storing, during the program mode, a sequence of digital data as a function of the intensity control signal, the stored sequence being representative of the desired FES regimen; and

a personal FES device for producing a personal device output pulse train in accordance with the desired FES regimen, the personal FES device including:

means for receiving, from the clinical FES device, the stored sequence of digital data representative of the desired FES regimen;

means for storing the digital data;

means for producing a personal device output pulse train;

means for applying the personal device output pulse train to the patient's body; and

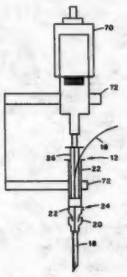
means for controlling the intensity of the personal device output pulse train as a function of the digital data to reproduce the desired FES regimen.

4,622,974

APPARATUS AND METHOD FOR IN-VIVO MEASUREMENTS OF CHEMICAL CONCENTRATIONS

Jerry T. Coleman, and Michael J. Sepaniak, both of Knoxville, Tenn., assignors to University of Tennessee Research Corporation, Knoxville, Tenn.

Filed Mar. 7, 1984, Ser. No. 587,234
Int. Cl.[4] A61B *5/00*
U.S. Cl. 128—634 **1 Claim**



1. An apparatus for use in making in-vivo determinations of light absorbance of biological fluid of a body comprising:

an insertion needle with a needle point for penetrating the body to a region of the biological fluid to be tested;

a reflective surface disposed within the needle and adjacent to the needle point in an orientation generally perpendicular to the longitudinal axis of the needle;

a sample cavity disposed within said needle for receiving and containing samples of the biological fluid, said reflective surface being disposed between said needle point and at least a portion of said sample cavity;

ingress means for providing a pathway from the biological fluids from outside the needle to said sample cavity within said needle to allow ingress of fluid into said sample cavity;

a source of light;

optical fiber having a first end disposed within said needle and a second end receiving light from said light source and transmitting light to said first end, said first end of said optical fiber being disposed at said sample cavity in an opposed generally parallel relationship with said reflective surface so that light is transmitted from the first end, through said sample cavity, and reflected by said reflective surface back through said sample cavity and into said first end, the distance between said reflective surface and said first end of said optical fiber defining one-half of the length of the sample light path through the sample cavity;

means for detecting the intensity of light transmitted from said second end of said single optical fiber simultaneously with the transmission of light into said second end by said light source whereby the biological fluid is determined by transmitting light into said sample cavity through said optical fiber and measuring the intensity of light is reflected by said reflective surface that passes through said sample cavity, and reenters said first end of said optical fiber to determine the amount of light that was absorbed by the light absorbing constituents of the biological fluid in said sample cavity; and

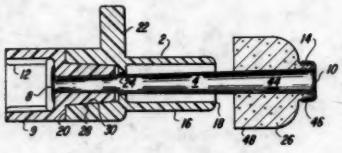
means for adjusting the distance between said reflective surface and the first end of said optical fiber to change the length of said sample light path,

said means for adjusting the distance between said reflective surface and the first end of said optical fiber comprising a micrometer mechanically linked to said optical fiber and mechanically linked to said needle to change and indicate the position of the first end of said fiber with respect to said reflective surface.

4,622,975
EAR CANAL ELECTRODE

Hal C. Danby, Palo Alto, and Myron A. Beigler, Los Altos Hills, both of Calif., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 342,490, Jan. 26, 1982, abandoned. This application Sep. 27, 1982, Ser. No. 424,387
Int. Cl.[4] A61B 5/04
U.S. Cl. 128—642 17 Claims

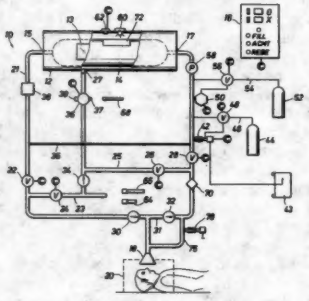


1. An apparatus for testing hearing loss comprising an ear canal electrode in combination with a means for analyzing electrical signals picked up from the ear canal surface and transmitted by an ear canal electrode, the ear canal electrode comprising a tubular electrode means of electro-conductive material for conducting electrical signals picked up from the ear canal surface and for transmitting a sound stimulus to an ear canal, said electrode means having a proximal end and a distal end, the distal end having mounted thereon an electro-conductive, resilient, annular plastic foam means through which the electrode means protrudes, for contacting the skin surface of the ear canal and picking up and conducting electrical signals therefrom to the tubular electrode means.

4,622,976
METHOD AND APPARATUS FOR CONDUCTING XENON INHALATION STUDIES

Gerald M. Timpe, and Terry W. Deville, both of Houston, Tex., assignors to Enhancer R & D, Houston, Tex.

Filed Apr. 15, 1985, Ser. No. 723,456
Int. Cl.[4] A61B 6/00
U.S. Cl. 128—654 29 Claims



1. Apparatus for conducting xenon-enhanced inhalation of a patient's lungs during neurological studies, including an oxygen source, a xenon source, and a patient breathing mask for transmitting inhalation gas to said patient, the improvement comprising:

a flexible bag defining a variable volume chamber for receiving said inhalation gas, said bag having an inhalation port and an exhalation port;

conduit means interconnected to said inhalation port, said patient breathing mask, and said exhalation port for series connecting said variable volume chamber and said patient's lungs in a closed loop;

a gas discharge port in fluid communication with said conduit means for releasing gas from said closed loop;

oxygen sampling means in fluid communication with said conduit means for detecting oxygen concentration within said closed loop;

xenon sampling means in fluid communication with said conduit means for detecting xenon concentration within said closed loop;

control means for providing preselected oxygen and xenon concentration values;

oxygen input valve means in fluid communication with said conduit means for selectively inputting oxygen from said oxygen source to said closed loop in response to a detected oxygen concentration value from said oxygen sampling means less than said preselected oxygen concentration value from said control means;

xenon input valve means in fluid communication with said conduit means for selectively inputting xenon from said xenon source to said closed loop to response to a detected xenon concentration value from said xenon sampling means less than said preselected xenon concentration value from said control means;

carbon dioxide removal means in fluid communication with said conduit means for removing carbon dioxide from said inhalation gas within said closed loop;

volume indicator means for detecting when said variable volume chamber obtains a predetermined minimum volume; and

first valve means responsive to said volume indicator means for closing said gas discharge port and terminating gas discharge from said closed loop when said variable volume chamber obtains said predetermined minimum value;

wherein substantially all xenon gas is thereafter repeatedly exhaled from said patient's lungs to said flexible bag and retained within said closed loop.

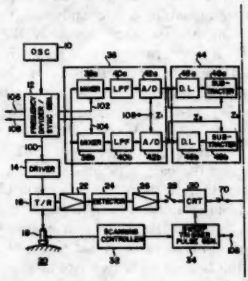
4,622,977
ULTRASONIC DIAGNOSTIC APPARATUS

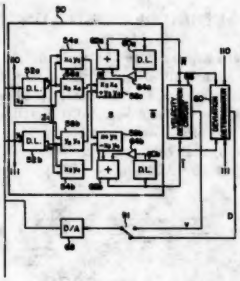
Kouroku Namekawa; Akira Koyano, and Chihiro Kasai, all of Tokyo, Japan, assignors to Aloka Co., Ltd., Tokyo, Japan

Filed Nov. 28, 1984, Ser. No. 675,824
Claims priority, application Japan, Dec. 5, 1983, 58-228330
Int. Cl.[4] A61B 10/00
U.S. Cl. 128—663 2 Claims

1. An improved ultrasonic diagnostic apparatus of the type wherein an ultrasonic pulse beam is repeatedly transmitted by a transmitting means coupled to a transducer means into a living organism at a fixed pulse rate and the reflected echoes are picked up by an echo receiver, amplified by an amplifier means and displayed as the velocity of movement within the organism on a display means, the improvement comprising a complex signal conversion means coupled to an output of the said echo receiver for converting said received reflected echoes into a complex signal, said complex signal converting means comprising means for providing a pair of complex reference signals which have frequencies that are integer multiples of the pulse rate and which are complexly related to one another, mixing means for mixing the received reflected echoes with a pair of complex reference signals, an autocorrelator means coupled to an output of the said signal conversion means for determining the autocorrelation of said complex signal, said autocorrelator means further comprising a time delay means with a time delay equal to an integer multiple of the period of the pulse rate for delaying in time the said complex signal, and a deviation determining means coupled to the output of said autocorrelator means for determining the amount of change in the absolute value of the autocorrelation of said complex signal

and for determining the rate of decrease of the absolute value of the said autocorrelation of said complex signal whereby the





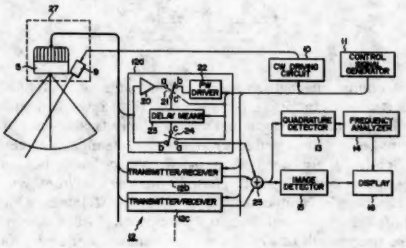
deviation distribution of the velocity of moving objects in the living organism is measured and displayed.

4,622,978

ULTRASONIC DIAGNOSING APPARATUS

Satoshi Matsuo, and Yasuo Miyajima, both of Ootawara, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 4, 1984, Ser. No. 677,852
Claims priority, application Japan, Dec. 5, 1983, 58-230187
Int. Cl.[4] A61B *10/00*
U.S. Cl. 128—663 **21 Claims**



1. An ultrasonic measuring apparatus for determining information concerning the blood flow of a living subject to be examined comprising:

a transducer probe for contact with the exterior surface of the subject;

Doppler transducer means, mounted on said transducer probe, for transmitting a continuous ultrasonic wave toward the subject along a fixed, first beam for intersection with the blood flow within the subject;

a transducer array of ultrasonic elements, mounted on said transducer probe proximate said Doppler transducer means, for receiving ultrasonic echos of the continuous ultrasonic wave which are reflected from the blood flow along a variable, second beam which intersects said first beam at an intersection point located within the blood flow of the subject;

scanning means, coupled with said transducer array, for selectively varying the direction of said second beam to adjust the intersection point of said first and second beam and thereby adjust the depth of the intersection point within the subject;

processing means, coupled with said Doppler transducer means and said transducer array, for processing signals from said Doppler transducer and said transducer array to provide a signal indicative of the velocity of the blood flow within the subject at the intersection point; and

indication means, coupled with said processing means, for providing an output of information indicative of the velocity of the blood flow within the subject at the intersection point.

4,622,979

USER-WORN APPARATUS FOR MONITORING AND RECORDING ELECTROCARDIOGRAPHIC DATA AND METHOD OF OPERATION

Louis J. Katchis, Miami, and Michael P. Bumgarner, N. Palm Beach, both of Fla., assignors to Cardiac Monitoring, Inc., North Palm Beach, Fla.

Filed Mar. 2, 1984, Ser. No. 585,790
Int. Cl.[4] A61B *5/04*
U.S. Cl. 128—702 **24 Claims**

1. Apparatus for monitoring and recording electrocardiographic data from a user, comprising

a portable monitoring, storing and recording unit;

sensing electrode means for sensing the user's electrocardiographic data, including data representative of a arrythmia episode;

means for supporting said sensing electrode means on the user's body;

amplifying means operatively connected to said electrode means for receiving therefrom and amplifying the analog electrical signals corresponding to said electrocardiographic data received from said electrode;

means for converting the entire analog signals to digital signals corresponding to said electrocardiographic data;

signal storage means for continuously receiving and storing said digital signals during successive predetermined time increments, said signal storage means including means for storing the digital signals representative to one time increment over the stored signals representative of a previous time increment, whereby the signals stored in the signal storage means at any given time comprise the signals received and stored during the most recent time increment;

means operatively connected to said signal storage means for halting further said storage of said digital signals upon the occurrence of a predetermined event, whereby the signals stored in the signal storage means will include those sig-

nals corresponding to the electrocardiographic data for the most recent time increment immediately prededing the occurrence of said predetermined event; and

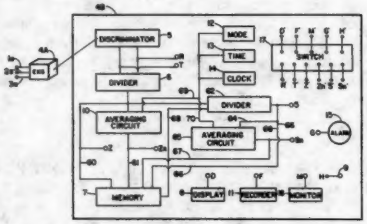
means for providing an output of said stored signals for subsequent analysis of said electrocardiographic data.

4,622,980

METHOD AND APPARATUS FOR DETERMINING OF STRESS CONDITION OF A SUBJECT

Horst E. Kunig, Box 577, R.D. 1, Saltsburg, Pa. 15681, assignor to Horst E. Kunig and John N. Robinson, both of Pittsburgh, Pa.

Filed Nov. 1, 1984, Ser. No. 667,129
Int. Cl.[4] A61B *5/04*
U.S. Cl. 128—704 **22 Claims**



13. A method of determining the stress condition of a subject which comprises:

determining the Stress Index of the subject at rest by establishing as Z(before) the ratio of the subject's electrocardiograph wave R-peak to the T-peak; thereafter subjecting the subject to stress; and, thereafter measuring the stress value Z following stress application as Z(after);

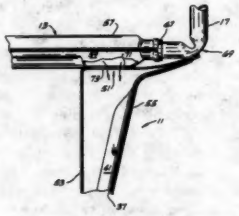
thereafter determining the ratio Z(after)/Z(before) as the Stress Index S.

4,622,981

DRAINAGE BAG SPACER AND BAG INCORPORATING SAME

Paul Sherlock, San Francisco, Calif., assignor to Sherwood Medical Company, St. Louis, Mo.

Filed Aug. 3, 1984, Ser. No. 637,678
Int. Cl.[4] A61B *5/00*; B65D *81/00*
U.S. Cl. 128—762 **9 Claims**



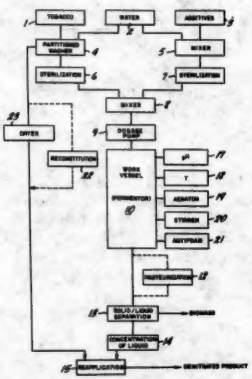
1. In combination a drainage bag for body fluids such as urine, a spacer in said bag, and a rigid metering collection chamber, said bag having a flexible front panel constituting the front of the bag, a flexible rear panel constituting the rear of the bag, the flexible front and rear panels being secured together along their peripheries to form the bag, and an inlet port generally near to but spaced from the top of the bag to permit the flow of body fluids into the bag, said rigid metering collection chamber having an inlet port generally near the top thereof for connection to a drain tube or the like to receive body fluids from a patient to be measured, said chamber also having an outlet port generally near the top thereof in fluid communication with the inlet port of the drainage bag to permit body fluids from the metering collection chamber to be manually dumped therefrom into the drainage bag when the collection chamber is lifted from a generally vertical to a generally horizontal position, said spacer being positioned in the bag between the front and rear panels, said spacer having a relatively flat planar main body and at least two ribs extending generally perpendicularly out from the planar body and spaced from each other, said ribs extending at their upper ends to the vicinity of the inlet port of the bag to facilitate the entry of body fluids being dumped therein from the collection chamber by holding the front panel away from the rear panel in the vicinity of the inlet port, at least two ribs of the spacer following opposite portions of the contour of the rigid metering collection chamber, the spacing between the two ribs at any point measured perpendicularly to the longitudinal axis of the collection chamber being slightly greater than the width of the collection chamber at that point so that the collection chamber seats within the ribs of the spacer.

4,622,982

CONTINUOUS METHOD OF DENITRATING TOBACCO EXTRACTS

Helmut Gaisch; Beth Krasna, both of Cormondrèche, and Dieter Schulthess, Neuchâtel, all of Switzerland, assignors to Fabriques de Tabac Reunies S.A., Neuchâtel, Switzerland

Filed Jun. 6, 1980, Ser. No. 156,910
Claims priority, application Luxembourg, Aug. 20, 1979, 81611; Feb. 25, 1980, 82199
Int. Cl.[4] A24B *3/14, 15/02*
U.S. Cl. 131—297 **45 Claims**

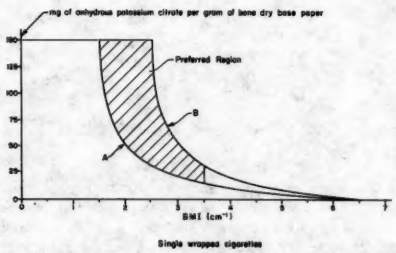


1. A continuous method for denitrating an aqueous tobacco extract which comprises adding extract to a work mixture containing tobacco extract and microorganisms, said microorganisms being characterized by an aerobic, assimilatory, metabolic pathway for denitrification of tobacco materials and being in exponential growth phase in the work mixture, while maintaining pH, temperature and aeration at levels which promote aerobic assimilation, at a dilution rate which does not exceed the growth rate of the microorganisms while additionally adding phosphate and a carbon source to the work mixture, said extract, phosphate and carbon source being sterile when added and being added in amounts such that the overall addition thereof is 0.1–7.5 g nitrate/l added, 1.0 to 10 g PO_4/l added and sufficient carbon source to provide at least 16.5 assimilative carbon atoms/NO_3 molecule added, while withdrawing a portion of the work mixture at a rate such that the volume of work mixture remains constant.

4,622,983
REDUCED IGNITION PROCLIVITY SMOKING ARTICLE WRAPPER AND SMOKING ARTICLE

John H. Mathews; Donald F. Durocher, and Vladimir Hampl, Jr., all of Roswell, Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation-in-part of Ser. No. 521,487, Aug. 8, 1983, abandoned. This application Jul. 11, 1984, Ser. No. 627,710
Int. Cl.[4] A24D *1/02*
U.S. Cl. 131—365 18 Claims

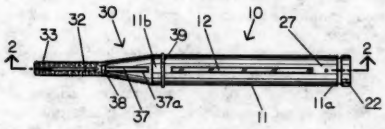


1. A single wrapper construction for smoking articles characterized by continuous free burn and having a reduced tendency to ignite other materials, said construction comprising a cellulose fiber containing base sheet having a BMI in the range of from about 1.5 cm^{-1} to about 5.0 cm^{-1} and said wrapper construction also contains an alkali metal salt burn promoter in an amount equivalent to between about 5 mg. and 150 mg. anhydrous potassium citrate per gram of bone dry base sheet.

4,622,984
TOOTHBRUSH

Gary R. Gaebel, Box 2, Murdock, Nebr. 68407

Filed Apr. 4, 1984, Ser. No. 596,674
Int. Cl.[4] A45D *44/18*
U.S. Cl. 132—84 R 6 Claims



1. A toothbrush of the type having a hollow handle containing a supply of paste and a means for dispensing the paste directly from the handle to the bristle end, the improvement comprising:

the handle having an opening threaded to mate with the threads of a toothpaste container;

a bristle supporting portion having a passageway communicating from an end threaded to mate with the opening of said handle, to an opening adjacent the bristles;

wherein said dispensing means includes:

a plunger having a threaded aperture in its center, said plunger slidably disposed within said hollow handle upon a threaded shaft;

said threaded shaft rotatably projecting through an aperture in the closed end of said handle for hand-manipulated rotation;

a guide projecting along an interior wall of said handle, parallel to the shaft, said guide mating with a notch in the edge of said plunger, whereby said plunger is advanced within said handle when the shaft is turned and the plunger is thereby restrained from turning with the shaft;

said handle being further characterized as having a small air hole proximal to its closed end, where-by air pressure within said handle is equalized during the operation thereof; and

wherein said handle has a transparent portion extending substantially along its length and projecting slightly inwards, and wherein said transparent portion serves as the guide for said plunger.

4,622,985
APPLICATOR TIP AND COSMETIC APPLICATOR PROVIDED THEREWITH

Axel Jankewitz, Fürth-Oberfürberg, Fed. Rep. of Germany, assignor to A. W. Faber-Castell GmbH & Co., Nuremberg, Fed. Rep. of Germany

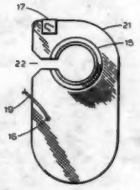
Continuation-in-part of Ser. No. 304,045, Sep. 21, 1981, Pat. No. 4,452,262. This application Mar. 14, 1984, Ser. No. 589,666
Int. Cl.[4] A45D *40/30*
U.S. Cl. 132—88.5 12 Claims

1. An applicator tip for cosmetic applicator, comprising a body at least partially composed of a capillary material impregnatable with a liquid medium, said body having a substantially circular cross section with an axis, a working end for applying a medium and a holding end to be held, said working end being formed as a paraboloid intersected by an inclined substantially flat cutting surface so as to form a flat application surface for applying a liquid medium over wide surfaces, a convexly curved application surface for applying a liquid medium over small surfaces, and an application apex for applying a liquid medium pointedly.

4,622,986
DENTAL FLOSS KNOT TYING DEVICE

Robert W. Harris, 625 NW. 41st St., Seattle, Wash. 98107, and William R. Weber, 4200-50th Ave. NE., Seattle, Wash. 98105

Filed Nov. 4, 1985, Ser. No. 794,700
Int. Cl.[4] A61C *15/00*
U.S. Cl. 132—92 R 2 Claims



1. A device to aid in the tying of dental floss comprising:

a. a dental floss storage compartment attached to a body;

b. said body having a hole with a slot extending to an outside edge;

c. a hollow tubular member, with an open groove, mounted on the body concentric to the hole with the groove aligned with the slot in the body;

d. a dental floss cutting means; and,

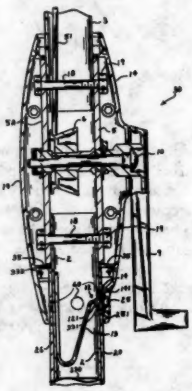
e. dental floss in said storage compartment, whereby a length of dental floss can be withdrawn from the storage compartment, doubled back, wrapped around the hollow tubular member, then through the slot to the reverse side of the body and inserted, from the reverse side, through the hollow tubular member to tie a knot forming a loop of a convenient size for flossing the teeth.

4,622,987

ROTATABLE SHADE UMBRELLA

Stefan Redl, Midland Park, N.J., and Edmund Killian, Merrick, N.Y., assignors to Finkel Outdoor Products, Inc., New York, N.Y.

Filed Jun. 13, 1985, Ser. No. 744,241
Int. Cl.[4] A45B *11/00*
U.S. Cl. 135—20 M 6 Claims



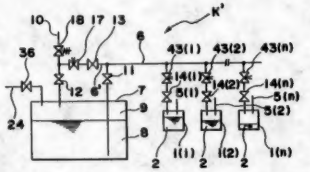
1. For a tiltable shade umbrella comprising an umbrella portion; an upper shaft supporting the umbrella portion; a middle shaft pivotally secured to the upper shaft above a horizontal axis; means for locking the upper and middle shafts selectively into a linear configuration and into an angular configuration; the improvement which comprises a lower shaft selectively rotatably, slidably, releasably mounted to the middle shaft, one within the other; a cam button resiliently secured to the innermost shaft of the lower and middle shafts, so as to protrude radially beyond the circumferential surface of the innermost shaft adjacent a first end thereof, and through one of a plurality of openings arranged circumferentially around the outermost shaft adjacent a first outer end thereof; the cam button being shaped to permit slidably interconnecting the middle and lower shafts by inserting the inner first end into the outer first end and sliding the outer shaft over the cam button until the cam button seats through one of the plurality of openings; sleeve means secured to and formed around the innermost of the middle and lower shafts, covering the opening therethrough but spaced radially outwardly therefrom so as to permit the outer shaft to slide thereunder; manual button means, radially movably secured to the sleeve means and in contact with the cam button to move the cam button radially inwardly of the outer shaft to release the outer shaft; and stop means within the casing to limit the movement of the lower shaft over the middle shaft so that the cam button is axially aligned with the plurality of holes in the lower shaft.

4,622,988

LIQUID REPLENISHING APPARATUS

Hiroaki Takimoto; Tetsuo Miyajiri; Tamio Turita, and Masanori Fujikawa, all of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed May 20, 1985, Ser. No. 735,733
Claims priority, application Japan, May 21, 1984, 59-100431
Int. Cl.[4] B01D *5/01*
U.S. Cl. 137—209 4 Claims



1. A liquid replenishing apparatus for supplying liquid raw material replenishment for liquid raw material of an article to at least one raw material tank such that said raw material tank stores therein said liquid raw material, said liquid replenishing apparatus comprising:

a replenishment tank for storing therein said liquid raw material replenishment, in which a space is defined above a liquid level of said liquid raw material replenishment;

a first pipe extending between said replenishment tank and said raw material tank;

a second pipe for introducing pressurized gas into said space so as to deliver said liquid raw material replenishment from said replenishment tank to said raw material tank through said first pipe;

a branch pipe communicating between said first pipe and said second pipe;

a pressure regulator which is provided in the course of said second pipe and which regulates the supply of said pressurized gas to said space so as to initiate without delay supply of liquid raw material replenishment from said replenishment tank to said raw material tank regardless of the amount of said liquid raw material replenishment remaining in said replenishment tank; and

a first flow regulator which is provided in the course of said branch pipe, said first flow regulator being designed so as to permit discharge of said liquid raw material replenishment remaining in said first pipe into said raw material tank after supply of said liquid raw material replenishment to said raw material tank.

4,622,989

CHECK VALVE RETAINER

William J. Zlotski, Canyon Country, Calif., assignor to HR Textron Inc., Valencia, Calif.

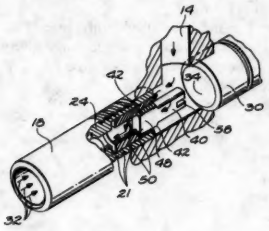
Filed Sep. 13, 1985, Ser. No. 775,900
Int. Cl.[4] F16K *43/00, 15/04, 51/00*
U.S. Cl. 137—315 4 Claims

1. In a check valve having a housing to be non-threadably received within a bore and having a hollow tapered plug force fitted within said housing to expand said housing for seating the valve within the bore the improvement for retaining the valve within the bore comprising:

threads formed internally of said hollow plug;

a retainer having a first and a second end and having external threads for threadedly engaging the internal threads of said plug, the outer diameter of said external threads increasing along said retainer away from said first end thereby to expand said plug and to further expand said housing to seat said plug in said bore as said retainer is threadedly received therein, said retainer defining a fluid

flow bypass path to permit free flow of fluid through said check valve; and



means on sid second end of said retainer for threadedly seating said retainer within said hollow plug.

4,622,990

VALVE AND COUPLING ASSEMBLIES

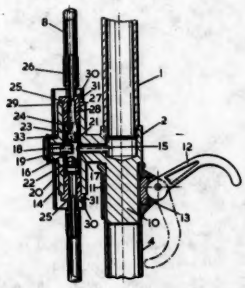
Geoffrey B. Norman, Gwynedd, England, assignor to Denis Ferranti Meters, Ltd., Gwynedd, England

Filed Apr. 29, 1985, Ser. No. 728,253

Claims priority, application United Kingdom, May 2, 1984, 8411300

Int. Cl.⁴ F16K *43/00*; F04B *7/00*; B65B *3/32*

U.S. Cl. 137—315 **5 Claims**



1. A valve assembly comprising a body defining an elongate bore and at least two ports communicating with the bore, the said at least two body ports being spaced apart along the length of the bore, a single tubular carrier located within and extending along the bore, the carrier being a loose sliding fit in the bore and defining carrier ports which are aligned with respective ones of said body ports, and a removable closure positioned at one end of the bore, wherein an annular groove is formed in the inside surface of the carrier between the carrier ports, the external diameter of the carrier and the internal diameter of the carrier on either side of the groove being substantially uniform, a valve seat in the form of an O-ring is retained in the groove, and a valve member in the form of a ball is retained within the carrier on one side of the O-ring, the outside diameter of the O-ring when unrestrained being larger than the said substantially uniform internal diameter of the carrier, and the outside diameter of the ball being less than the said substantially uniform internal diameter of the carrier, and the outside diameter of the ball being less than the said substantially uniform internal diameter of the carrier but greater than the internal diameter of the O-ring, and upon removal of said closure said carrier is slidably removed from said one end of the bore as a single unit for assemblying and disassemblying the valve components.

4,622,991

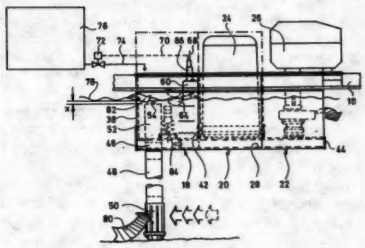
EVAPORATION SENSOR FOR AN AQUARIUM

Norbert Tunze, Wankstr. 39, D-8122 Penzberg, Fed. Rep. of Germany

Filed Mar. 13, 1984, Ser. No. 589,150

Int. Cl.⁴ F16K *31/18, 33/00*

U.S. Cl. 137—386 **19 Claims**



1. An evaporation sensor for an aquarium comprising

(a) a sensor container,

(b) support means to mount said sensor container within the perimeter of said aquarium,

(c) an overflow edge located near the upper portion of a side wall of said sensor container, said overflow edge being positioned so that it is a slight distance below the desired level of the water in the aquarium and so that water will flow from the aquarium over it when the water in the aquarium is at the desired level,

(d) a passageway in the lower portion of said sensor container which permits water to be drawn into the sensor container from the aquarium at a point below the surface of the water in the aquarium,

(e) an overflow tube that has its lower end connected to said passageway and which extends upwardly therefrom to a point a short distance below said overflow edge,

(f) pump means connected to said sensor container to draw water from said passageway and then outwardly through said sensor container, and

(g) water level sensing means positioned within the upper portion of said sensor container to detect a drop in the level of the water in the sensor container and which can activate means to add further water to the aquarium.

4,622,992

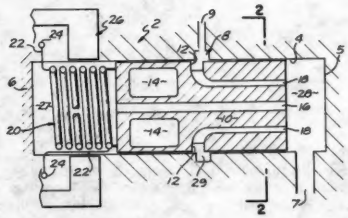
REACTION CONTROL VALVE

Ivan E. Sutherland, 5139 Penton Rd., Pittsburgh, Pa. 15213

Filed Jan. 17, 1983, Ser. No. 458,698

Int. Cl.⁴ F16K *31/12*

U.S. Cl. 137—504 **8 Claims**



1. An apparatus for controlling fluid flow, comprising:

a stationary element defining inlet and outlet ports for fluid flow;

a movable element contained for movement relative to said

stationary element whereby to define at least one metering orifice therewith to vary the flow of fluid therethrough, said movable element further defining at least one internal passage of a length and cross-sectional area to provide a damping effect appropriate to said reaction force to give the desired stability and sensitivity to the valve, coupled to said metering orifice such that a reaction force is provided on said movable element that is proportional to the flow rate through said metering orifice; and

balancing means for applying a force to said movable element to attain a balance with said reaction force.

4. An apparatus for controlling fluid flow, comprising:

a stationary element defining inlet and outlet ports for fluid flow;

a movable element contained for movement relative to said stationary element whereby to define at least one metering orifice therewith to vary the flow of fluid therethrough, said movable element further defining at least one internal passage coupled to said metering orifice such that a reaction force is provided on said movable element that is proportional to the flow rate through said metering orifice;

balancing means for applying a force to said movable element to attain a balance with said reaction force; and

force means to apply a force to said movable element to accomplish a predetermined imbalance.

7. An apparatus for controlling fluid flow, comprising:

a stationary element defining inlet and outlet ports for fluid flow; and

a movable element contained in said stationary element for relative movement, and whereby variable metering passages are defined to interconnect said inlet and outlet ports of said stationary element, said passages including at least two pairs of passages to accommodate opposing fluid flows whereby to develop opposed reaction forces on said movable element and wherein one of said pairs of passages passes a substantially constant rate of flow whereby to develop a net reaction force linearly proportional to the difference in the flows through said one pair of passages and wherein a second pair of said passages accommodates a volume of flow relatively large in relation to said one pair of passages, said pair of passages further each being variable to meter reduced flow of fluid with increased reaction force.

4,622,993

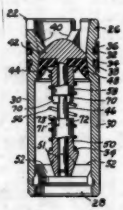
WELL PIPE FLOAT VALVE

Julian S. Taylor, 8300 SW. 8, Oklahoma City, Okla. 73128

Filed Feb. 20, 1986, Ser. No. 831,205

Int. Cl.[4] F16K *15/06*

U.S. Cl. 137—542 **4 Claims**



1. In a drill pipe float assembly comprising an elongated cylindrical cage having upper and lower rings joined by diametrically opposite vertical wall members, said upper ring having a downwardly facing valve seat on its inner perimeter, a valve stem guide member supported by the lower ring including a central vertical bearing sleeve slidably guiding the depending end portion of a valve stem having a valve on its upper end including an elastomer seal seating and unseating on the valve seat in response to the direction of fluid flow through said ring members, a cylindrical spring retainer on the valve stem in contact with the valve seal, and a helical spring surrounding the valve stem and biasing the valve toward its seat, the improvement comprising:

means secured to the respective confronting end surfaces of the spring retainer and the valve stem guide sleeve for interdigitated engagement in response to fluid flow in one direction through the float assembly.

4,622,994

FLUID HANDLING DEVICE

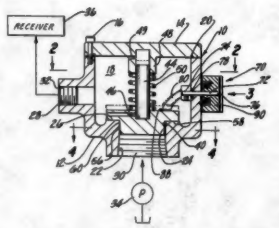
Nils O. Rosaen, 2139 Heide, Troy, Mich. 48084

Continuation of Ser. No. 523,109, Aug. 15, 1984, abandoned.

This application Apr. 8, 1985, Ser. No. 720,452

Int. Cl.[4] F16K *37/00*

U.S. Cl. 137—557 **8 Claims**



1. A fluid handling device comprising:

a housing having an inlet, an outlet and a fluid passageway between said inlet and outlet,

check valve means for preventing fluid flow through said passageway from said outlet and to said inlet, said valve means comprising a valve member and a valve seat contained in said housing, said valve seat forming a port in series with said fluid passageway, said valve member movable between a fully open and a fully closed position with respect to said valve seat, said movement of said valve member between said fully open and said fully closed position forming the entire range of travel of said valve member,

means for urging said valve member towards said closed position,

means for indicating the position of said valve member along the entire range of travel of the valve member exteriorly of said housing, said indicating means mounted to said housing radially outwardly from said check valve means,

wherein said valve member includes a surface which cooperates with a surface of said valve seat to form an opening between said surfaces which opening proportionally increases in area as said valve member moves from its closed towards its open position, and

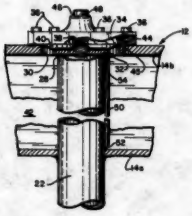
whereby said indicating means indicates the position of said valve member between said fully open and said fully closed position to thereby indicate the changes in the area of said opening as said valve member moves from its closed toward its open position so that said indicating means is operable to indicate the change in the flow rate of fluid flowing through said device.

4,622,995

INTEGRAL VALVE AND TANK ASSEMBLY FOR PULSE-JET AIR CLEANERS

Gary R. Gillingham, Prior Lake, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.

Filed Mar. 14, 1985, Ser. No. 711,663
Int. Cl.[4] B01D *46/04*
U.S. Cl. 137—590 5 Claims



1. An integral valve and tank assembly for a pulse-jet air cleaner, comprising:

a tank of compressed air;

a discharge pipe extending in sealed engagement through said tank and having an inlet end opening of predetermined size disposed adjacent to and inside a relatively larger opening formed in one wall of said tank;

pulse valve means mounted over the tank opening and including a diaphragm normally biased into sealing engagement with the inlet end of said discharge pipe, for selectively releasing a pulse of air from said tank directly through said pipe; and

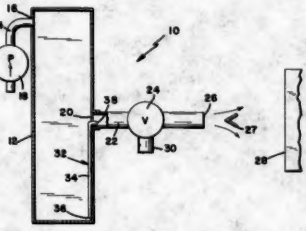
an aspirator tube secured inside said tank and having inlet and outlet ends, the inlet end terminating at a point in said tank where moisture tends to collect, and the outlet end terminating at a predetermined point within the tank opening and adjacent the inlet end of said discharge pipe where the airflow upon actuation of said pulse valve means is of high velocity and low pressure so that moisture will be drawn out and discharged on a substantially continuous basis.

4,622,996

ASPIRATOR FOR PULSE-JET AIR CLEANER

Gary R. Gillingham, Prior Lake, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.

Filed Mar. 14, 1985, Ser. No. 711,763
Int. Cl.[4] B01D *46/04*
U.S. Cl. 137—590 5 Claims



1. In a pulse-jet air cleaner of the type including a compressed air tank with an outlet connected to a pulse valve, the improvement comprising:

an internal aspirator tube of smaller diameter than the tank outlet and having inlet and outlet ends, the inlet end of said tube terminating at a point in the tank where moisture tends to collect, and the outlet end of said tube terminating at a predetermined point relative to the tank outlet where the airflow upon actuation of the pulse valve is of high velocity and low pressure so that moisture collected within said tank will be drawn out on a substantially continuous basis upon each actuation of the pulse valve;

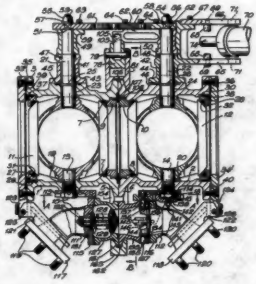
the inlet end of said tube being bevelled with a tip that engages a lower portion of the tank to facilitate moisture pickup.

4,622,997

EMERGENCY RELEASE COUPLERS

Arthur L. Paddington, Whitstable, England, assignor to Bridon P.L.C., England

Filed Jul. 26, 1985, Ser. No. 759,171
Claims priority, application United Kingdom, Jul. 27, 1984, 8419197
Int. Cl.[4] F16L *23/04*
U.S. Cl. 137—595 11 Claims



1. An emergency release coupler for releasably coupling together two pipes which comprises a first valve adapted to be coupled to a first pipe, a second valve adapted to be coupled to a second pipe and a band coupler for coupling together said valves; wherein each valve comprises a casing housing, a pivotally mounted valve member which is movable between a closed position and an open position, each valve member being mounted on a respective shaft which extends out of the associated casing; wherein the band coupler comprises a plurality of segments, each segment being pivotally connected at one end to an adjacent segment and connected at its other end to one of a further segment and a clamping member, two said clamping members being provided which are adapted to be releasably held together by a clamping device and the segments and clamping members serving to clamp the valve casings together; and wherein drive means are provided for turning said shafts to operate said valves and for operating said clamping device, the drive means including gear means mounted on said shafts, said gear means providing a gear drive between the shafts when the valve casings are clamped together, the drive means being arranged, when driven in one direction, to cause the shafts to pivot to move the associated valve members to the open position and, when driven in a direction opposite to said one direction, to cause the shafts to pivot to move the associated valve members to the closed position and then to operate the clamping device to release at least one of said clamping members so that the clamping members and segments are no longer effective to clamp the valve casings together whereby said casings can be separated from each other.

4,622,998

HYDRAULIC CONTROL DEVICE

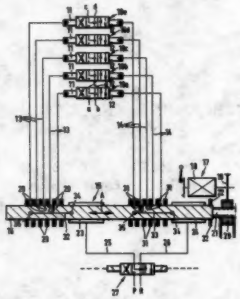
Willy Kussel, Werne, and Bayramali Demircan, Bergkamen-Rünthe, both of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Aug. 16, 1985, Ser. No. 766,351

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1984, 3435952

Int. Cl.[4] F15B *13/06*

U.S. Cl. 137—596.15 20 Claims



12. A hydraulic control system for a mine roof support assembly, the hydraulic control system comprising a hydraulic control device and a plurality of hydraulic control valves which are controlled by the hydraulic control device, the hydraulic control device comprising a longitudinal slide valve having a slide member longitudinally reciprocable in a slide valve housing, and a drive for moving the slide member within the slide valve housing, wherein the slide member includes an axial bore, said axial bore opening into a respective pair of axially-spaced radial bores which terminate at the peripheral surface of the slide member, a first radial bore of said axial bore opening into an annular groove formed in the slide valve housing, and the second radial bore of said axial bore being connected to a group of control ports provided on the slide valve housing, the control ports of said group being axially spaced, and the control ports of said group being connected to the hydraulic control valves by respective hydraulic control lines.

4,622,999

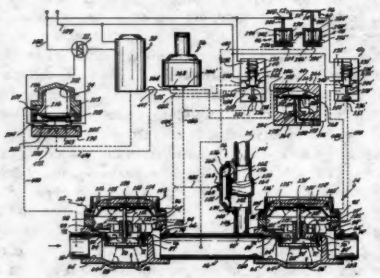
GAS FLOW CONTROL SYSTEM WITH PILOT GAS BOOSTER

William A. Ray, 888 S. Orange Grove Blvd., #3E, Pasadena, Calif. 91105

Continuation-in-part of Ser. No. 481,075, Mar. 31, 1983, abandoned. This application Jun. 17, 1985, Ser. No. 745,792

Int. Cl.[4] F16K *31/128*

U.S. Cl. 137—599 16 Claims



1. In a gas fired control system including at least one pressure operated valve, pilot valve means for controlling said pressure operated valve, the pressure operated valve having a gas inlet, a branch line having a booster pump unit in it connected to said inlet for producing a boosted pressure above gas inlet pressure and means whereby said pilot valve means controls said pressure operated valve by controlling said booster pressure.

4,623,000

MOVABLE PLAQUE FOR THE FLOW CONTROL DEVICE OF A SINGLE CONTROL MIXER VALVE

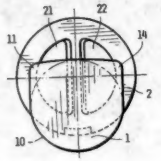
Alfons Knapp, Biberach an der Riss, Fed. Rep. of Germany, assignor to Gevipi A.G., Vaduz, Liechtenstein

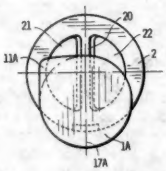
Filed Apr. 18, 1985, Ser. No. 725,135

Claims priority, application Italy, May 23, 1984, 67518 A/84

Int. Cl.[4] F16K *11/06*

U.S. Cl. 137—625.17 7 Claims





1. An imperforate movable hard material plaque slidably supported for both diametrical and rotational displacements with respect to a fixed circular plaque having two passage openings in the flow control device of a single control mixer valve so as to selectively open and close said passage openings, whose shape substantially comprises a basic circle at least half of which forms the outline of the movable plaque, and at least one substantially triangular portion which protrudes towards the outside from said basic circle and whose two outer sides are both substantially tangent to said basic circle.

4,623,001

ROTARY SLIDE VALVE

Helmut J. Vogler, Solingen, Fed. Rep. of Germany, and Peter H. Janssen, Panningen, Netherlands, assignors to Kalvo-Vogler GmbH, Solingen, Fed. Rep. of Germany

Filed Nov. 8, 1984, Ser. No. 669,601

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1983, 3340400

Int. Cl.[4] F16K *11/085*

U.S. Cl. 137—625.46 2 Claims

1. A rotary slide valve comprising:

a generally hollow cylindrical rotary valve member having closed ends and centered on an axis;

an inner fixed cylinder slidably receiving said valve member and coaxial therewith;

an outer fixed cylinder spaced outwardly from said inner fixed cylinder, having a larger diameter than said inner cylinder and coaxial therewith and with said valve member;

two pairs of coplanar webs interconnecting said cylinders, the webs of one of said pairs lying at a right angle to the webs of the other pair whereby said webs define between said cylinders four arcuate sectors at respective quadrants around said axis;

an inlet fitting and an outlet fitting generally parallel with one another at one side of said outer cylinder and connected thereto in communication with respective ones of said sectors at said one side;

a first conduit and a second conduit generally parallel with one another at an opposite side of said outer cylinder and connected thereto in communication respectively with the others of said sectors at said opposite side,

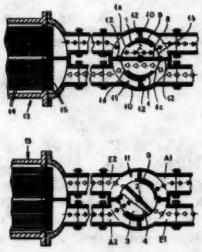
said first conduit being in axial alignment with said outlet fitting and said second conduit being in axial alignment with said inlet fitting,

said first conduit being in communication with its respective sector at a location diametrically and diagonally opposite the connection of said inlet fitting with its respective sector and

said outlet fitting communicating with its respective sector diametrically and diagonally opposite the connection between said second conduit with its respective sector,

said inner cylinder being formed with a respective opening communicating with each of said sectors;

a first passageway formed in said valve member centrally of the ends thereof and provided with a first pair of openings



communicating with diametrically opposite sectors in a first angular position of said valve member; and

a partition formed in an axial plane of said valve member at least in said first passageway dividing the interior thereof into two compartments bounded by said partition,

said partition dividing said first pair of openings into respective apertures opening in pairs into said compartments and communicating with each of said sectors in a second angular position of said valve member wherein said partition lies substantially between said sides of said outer cylinder and parallel to said conduits and fittings, whereby said first conduit and said outlet fitting are interconnected by one of said compartments and said second conduit and said inlet fitting are connected by the other of said compartments,

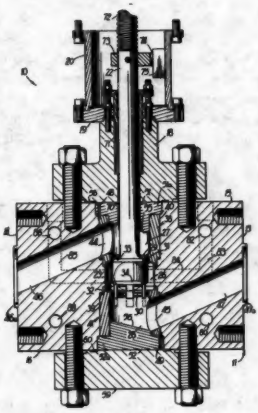
said valve member being provided with two additional second passageways flanking said first passageway and having diametrically opposite second apertures formed thereon whereby rotation of said member from said second position into said first position angularly offset from said second position will effect communication through said second passageways to two diagonally opposite sectors while communication between two other diagonally opposite sectors is effected simultaneously through both of said compartments of said first passageway so that said first conduit and said inlet fitting are interconnected and said second conduit and outlet fitting are interconnected.

4,623,002

POLYMER CONTROL VALVE

Kevin G. Schoonover, Atlanta, and Donald S. Sanders, Norcross, both of Ga., assignors to Steam Systems and Services Incorporated, Atlanta, Ga.

Filed Mar. 25, 1985, Ser. No. 715,630
Int. Cl.[4] F16K *49/00, 11/044, 1/06*
U.S. Cl. 137—625.48 **4 Claims**



1. A flow control valve for viscous flowable material, comprising:

a valve body;

a valve passage within said valve body, said valve passage being cylindrical and having an axis extending between first and second terminal ends in the valve body;

flow deflecting planar surfaces intersecting said cylindrical valve passage at said first and second ends, each said planar surface being at an oblique angle relative to said axis of the cylindrical valve passage;

valve means in said valve passage between said flow deflecting surfaces and operative to selectively block the valve passage; and

first and second outflow passages formed in said valve body and extending to inner ends respectively intersecting said cylindrical valve passage contiguous to said first and second ends and forming flow ports confronting said oblique flow deflecting planar surfaces obliquely intersecting the valve passage at the first and second ends,

whereby viscous material flowing in one outflow passage enters the valve passage through one of said flow ports and there flows into contact with the oblique flow deflecting planar surface confronting the flow port so that the oblique surface deflects the flow of viscous material to change direction from the one outflow passage to the axis of the valve passage, the viscous material then flowing to said valve means and selectively flowing past the valve means to contact the obliquely-angled flow deflecting planar surface confronting the other said flow port, whereat the flow of viscous material changes direction from the valve passage to enter the other outflow passage.

4,623,003

HYDRAULICALLY ACTUATED SPOOL VALVE

Willie B. Leonard, 5902 Royalton, Houston, Tex. 77036

Filed Apr. 8, 1985, Ser. No. 721,110
Int. Cl.[4] F15B *13/043*
U.S. Cl. 137—625.66 **13 Claims**

1. A fluid actuated spool valve comprising:

a housing having a bore,

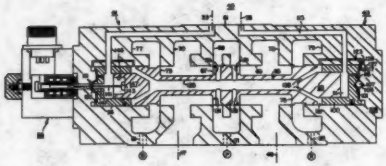
a spool axially slidable in said bore,

said housing having inlet means adapted for connection to a source of pressure fluid and outlet means adapted for connection to a load cylinder,

said spool having closure means controlling flow through said inlet and outlet means according to the axial position of the spool, said closure means in one position of said spool blocking flow from said inlet means to said outlet means and in another position allowing flow from said spool to said outlet means,

said inlet means including port means in said housing communicating with said bore, said spool having closure means thereon contacting said bore and in said one position of said spool blocking entrance of fluid into said bore,

stub piston means on the spool extending axially therefrom defining an annular area at the end of the spool around the piston and a disc area at the end of the piston,



means associated with said housing providing a cylinder having a side wall around the piston and an end wall opposite said disc area and having at the end remote from said end wall an annular lip opposite said annular area,

said side wall and end wall and disc area defining a first chamber,

said housing, annular lip, and annular area defining a second chamber,

means to admit control fluid to one of said chambers to move said spool axially, and

means to admit fluid from said inlet means to the other chamber to keep same filled with fluid at constant pressure and lubricate said closure means, and

wall means always separating said chambers whereby they can be at different fluid pressures.

4,623,004

WOVEN SLIDE FASTENER STRINGER

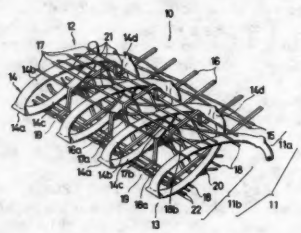
Haruo Matsushima, and Yuuji Yamase, both of Kurobe, Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan

Filed Dec. 6, 1985, Ser. No. 805,804

Claims priority, application Japan, Dec. 6, 1984, 59-185405[U]

Int. Cl.[4] A44B *19/10*

U.S. Cl. 139—384 B **6 Claims**



1. A woven slide fastener stringer comprising:

(a) a woven stringer tape formed with foundation warp threads and a weft thread and having a filament woven section defining a longitudinal edge portion of said stringer tape;

(b) a row of successively interconnected elongated loops formed from a plastic filament and woven into said filament woven section, each of said loops having a coupling head at one end thereof, an upper leg and a lower leg extending from said head in a common direction, and a heel portion remote from said head connected to a next adjacent one of said successive loops;

(c) a group of upper binding warp threads extending in parallel longitudinally of said stringer tape, overlying said upper legs of said filament loops and interwoven with said foundation weft thread, a group of lower binding warp threads extending in parallel longitudinally of said stringer tape, underlying said lower legs of said filament loops and interwoven with said foundation weft thread, both said groups of binding warp threads running as a whole substantially along a straight path at the region which extends substantially from the midpoint of each of said upper and lower legs to said heel portions;

(d) a gap-filling warp thread extending parallel with and between an outermost one of said upper binding warp threads and the next adjoining upper binding warp thread and also between an outermost one of said lower binding warp threads and the next adjoining lower binding warp thread, and passing alternately over and under said foundation weft thread, thereby tensioning said foundation weft thread to sink substantially halfway between said upper and lower legs of an adjacent pair of loops; and

(e) a plurality of loop-clamping warp threads extending between said upper and lower binding warp threads except said outermost two binding warp threads, and alternately overlying said upper legs and said foundation weft thread and underlying said lower legs and said foundation weft thread at every other adjacent loops.

4,623,005

METHOD OF AND APPARATUS FOR CONTROLLING WEFT THREADS IN A SHUTTLELESS LOOM

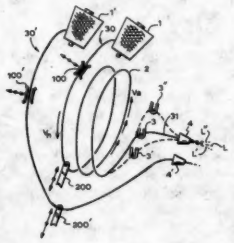
Vladimir Svaty, Liberec, Czechoslovakia, assignor to Elitex Koncern Textilniho Strojirenstvi, Liberec, Czechoslovakia

Filed Jun. 13, 1984, Ser. No. 620,108

Claims priority, application Czechoslovakia, Jun. 15, 1983, 4323-83

Int. Cl.[4] D03D *47/36*

U.S. Cl. 139—452 **2 Claims**



1. Method of controlling a weft thread in a shuttleless weft-change loom, said weft thread being measured by a rotary measuring apparatus having a winding arm rotating at a speed which is variable relative to a measuring drum cooperating therewith, comprising the following steps: at the time of measuring of the weft thread and during its insertion proper, the weft thread is at first braked at a position intermediate a measuring point and a weft thread supply, the braking of the weft thread being in due proportion to the force by which the measured-off thread is propelled during its insertion into the warp shed, after which, upon withdrawal of the last convolution of the measured-off length of the weft thread from the

measuring drum, the weft thread is fully braked to a stop intermediate said supply and said measuring point, whereby the weft is stopped in a predetermined position at the moment of withdrawal of the said last convolution thereof, and subsequently it is brought into its rest position by the winding arm, after which the winding arm is then disengaged from the weft, the weft staying in its rest position until it is next caught by the winding arm, the intensity of braking of the weft being again reduced after the weft has been again caught by the winding arm.

4,623,006

METHOD OF AN APPARATUS FOR CONTROLLING AND MEASURING WEFT THREADS

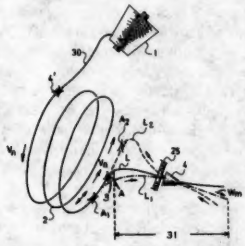
Vladimir Svaty, Liberec, Czechoslovakia, assignor to Elitex, koncern textilniho strojirenstvi, Liberec, Czechoslovakia

Continuation-in-part of Ser. No. 321,275, Nov. 13, 1981, abandoned. This application Jul. 9, 1984, Ser. No. 628,427

Claims priority, application Czechoslovakia, Nov. 17, 1980, 7758-80

Int. Cl.[4] D03D *47/36*

U.S. Cl. 139—452 **6 Claims**



1. Method of controlling weft threads in a weft thread measuring operation in a shuttleless loom which forms a shed, comprising continuously winding weft thread in one direction into a helix, continuously rotating said helix in the same direction as the direction of the winding, periodically discharging into the shed of the loom a measured length of weft thread in dependence upon the weaving process of the loom, and alternately imparting to the portion of the weft thread extending between the helix and the shed of the loom reverse rotary motions in the same and then in the opposite direction rlative to the direction of rotation of the helix, whereby the end portion of the weft thread downstream of the helix thereof is alternately wound and then unwound before its insertion into the shed of the loom.

4,623,007

DEVICE FOR METERING WEFT YARN

John D. Griffith, Cleadon, England, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Jul. 15, 1985, Ser. No. 755,160

Claims priority, application United Kingdom, Jul. 21, 1984, 8418669

Int. Cl.[4] D03D *47/36*

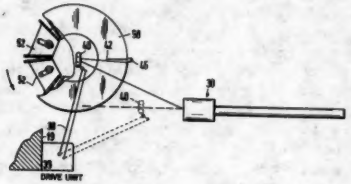
U.S. Cl. 139—452 **5 Claims**

1. A weft yarn metering device for a fluid loom having a predetermied direction of weft yarn insertion, comprising:

a rotatable spool for wrapping weft yarn and having an axis of rotation extending transverse to said predetermined direction of weft yarn insertion;

a movable weft yarn guide having a first position and a second position;

said movable weft yarn guide being substantially aligned with said predetermined direction of weft yarn insertion for allowing said weft yarn to be withdrawn from said rotatable spool when said movable weft yarn guide is in said first position; and



said movable weft yarn guide being substantially aligned with said axis of rotation of said rotatable spool for allowing yarn to be wrapped about said rotatable spool when said movable weft yarn guide is in said second position.

4,623,008

AUTOMATIC DISPENSING SYSTEM

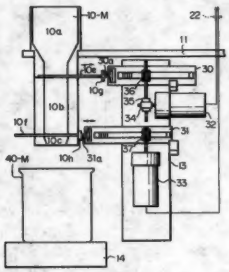
Shinich Shibata, and Takashi Ito, both of Saitama, Japan, assignors to Sakata Shokai, Ltd., Osaka, Japan

Filed Aug. 10, 1984, Ser. No. 639,478

Claims priority, application Japan, Aug. 12, 1983, 58-147352; Aug. 24, 1983, 58-154272

Int. Cl.[4] B65B *3/04*

U.S. Cl. 141—89 **18 Claims**



1. An automatic dispensing system, comprising:

means for supplying a plurality of pipettes, each being manipulatable for taking stock solutions therein from stock vessels and discharging the stock solutions therefrom into receptacles;

means, detachably attachable to a selected pipette of the plurality of pipettes, for manipulating the selected pipette when detachably attached thereto so as to take in the stock solution from the stock vessels and so as to discharge the stock solution therein to the receptacles;

said supplying means including means, detachably attachable to the selected pipette, for washing the selected pipette of remaining stock solution therein when detachably attached thereto after being manipulated by said manipulating means;

pipette transferring means for transferring the selected pipette for said supplying means to said manipulating means so as to be detachably attached thereto, and for transferring the selected pipette from said manipulating means to said washing means so as to be detachably attached thereto; and

control means for controlling said manipulating means, said washing means, and said pipette transferring means, said control means including:

means for automatically selecting a first pipette and a

second pipette of the plurality of pipettes to be provided to said manipulating means, and

means for controlling said pipette transferring means, said manipulating means and said washing means such that the first pipette and the second pipette are in turn automatically successively transferred to said manipulating means, detachably connected to and manipulated by said manipulating means so as to take in the stock solution from the stock vessels and so as to discharge the stock solution therein to the receptacles, transferred to said washing means and washed by said washing means, and such that the first pipette is washed by said washing means while the second pipette is being manipulated by said manipulating means.

4,623,009

COVERING RING FOR A VEHICLE WHEEL

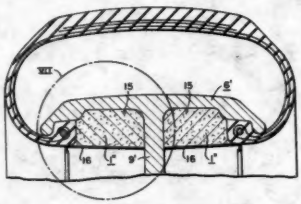
Hans Seitz; Udo Frerichs, both of Langenhagen; Heinz-Dieter Rach, Garbsen, and Siegmund Spendel, Betheln, all of Fed. Rep. of Germany, assignors to Continental Gummi-Werke Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Division of Ser. No. 540,194, Oct. 7, 1983, Pat. No. 4,563,042. This application Jun. 7, 1985, Ser. No. 742,612

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1982, 3237544

Int. Cl.[4] **B60B** *21/02;* **B60C** *15/02*

U.S. Cl. 152—380 **4 Claims**



1. A covering ring for a vehicle wheel on which is mounted a pneumatic, belted tire having a pull-resistant and compression-resistant cores in the tire beads; said wheel having a rigid rim, radially inwardly extending rim flanges and a rim well, with a respective seating surface for receiving said tire being provided on the radially inner periphery of said rim next to each rim flange; that portion of the radially inner periphery of said rim between each seating surface and the rim well extending in such a way that it has an average diameter which is greater than the average diameter of said seating surfaces;

said covering ring being an annular body which has such a width that in the installed state covers the space between a given tire bead, the rim well, and that portion of said rim which extends axially outwardly from said rim well toward said given tire bead; said covering ring, in the installed state, having a radially inwardly facing surface which, when viewed in the transverse direction, extends in a direction ranging from being horizontal to being outwardly inclined in such a way that the radially inner diameter thereof increases from said rim well in the direction toward the axially outer part of said covering ring; at no point of the space which is to be covered is this radially inner diameter of said covering ring greater than the radially inner diameter of the mounted tire in the bead regions thereof; said covering ring comprising hard foam material and filling said space between a given tire bead, the rim well, and that portion of said rim which extends axially outwardly from said rim well toward said given tire bead, said radially inwardly facing surface of said covering ring being provided with an ornamental ring.

4,623,010

TIRE BEAD PROTECTOR DEVICE

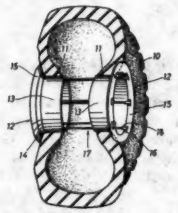
Kinya Takahashi, Hiroshima, Japan, assignor to Daikyo Co., Ltd., Japan

Filed Dec. 3, 1984, Ser. No. 677,482

Claims priority, application Japan, Dec. 3, 1983, 58-187358[U]; Jun. 16, 1984, 59-89770[U]

Int. Cl.[4] **B60C** *5/00, 19/00;* **B65D** *85/06*

U.S. Cl. 152—450 **7 Claims**



1. A tire bead protector device comprising a pair of bead protectors removably fittable to the opposed pair of bead portions of a tire and each comprising a tubular portion with an outer periphery substantially fittable to the inner periphery of the tire bead portion and a flange portion extending from the outer end of the tubular portion with a curved portion formed therebetween to conform to the outer side surface of the bead portion, each of the bead protectors being integrally molded from a thermoplastic resin in an annular form having a substantially L-shaped radial section, and fastening bands each having a stretchable portion for interconnecting the pair of bead protectors axially of the tire with the elastic force of the stretchable portions when the protectors are fitted to the tire bead portions, the device being characterized in that:

the flange portion is formed on its outer side surface with a plurality of projections projecting radially outward thereof to form engaging cavities and arranged circumferentially thereof at a spacing, and

each of the fastening bands has a plate-like metal member attached to each end of the stretchable portion and having a hook, the metal member being provided with a planar portion in engagement with the curved portion at the outer end of the tubular portion of the bead protector and bent around the curved portion radially outward to engage the end of the hook in the engaging cavity of the flange portion over the projection.

4,623,011

TIRE-REINFORCING DIP CORD AND PROCESS FOR PREPARATION THEREOF

Tadao Kanuma, Kyoto, Japan, assignor to Asahi Kasei Kogyo Kabushiki Kaisha, Japan

Filed Dec. 21, 1983, Ser. No. 564,003

Int. Cl.[4] **B60C** *9/00;* **D02G** *3/48*

U.S. Cl. 152—451 **6 Claims**

1. A tire-reinforcing dip cord composed of fibers of at least one polyamide selected from the group consisting of nylon 6 and nylon 66 said dip cord having the following characteristics:

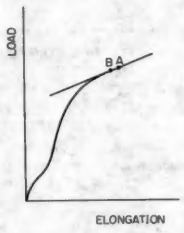
(1) a strength at break of at least 8.2 g/d;

(2) an elongation of at least 18% under a load of 8 g/d;

(3) a gradient (T.E. coefficient) not larger than 0.75 in the load-elongation curve immediately before break; and

(4) a cord diameter variation ratio (V.G. value) not larger

than 0.65, said cord diameter variation ratio being expressed by the ratio (D/Do) of the cord diameter (D)



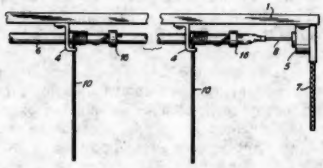
under a load of 450 g to the cord diameter (Do) under no load.

4,623,012

HEADRAIL HARDWARE FOR HANGING WINDOW COVERINGS

Edward T. Rude, Fairfield; Jules Nisenson, Stamford, and Martin Waine, Riverside, all of Conn., assignors to General Clutch Corporation, New York, N.Y.

Filed Dec. 27, 1983, Ser. No. 565,709
Int. Cl.[4] A47H *1/00*
U.S. Cl. 160—243 **18 Claims**



1. A lifting mechanism comprising a cylinder; bracket means to support said cylinder; rotation means; said cylinder being slideably connected to said rotation means to allow torque to be transmitted between said rotation means and said cylinder while still permitting lateral movement of said cylinder relative to said rotation means; a camming surface; a lift cord attached to said cylinder and bearing against said camming surface responsive to rotation of said cylinder for wrapping itself around said cylinder and for alone moving said cylinder in a first lateral direction at a rate determined solely by the pitch of said camming surface and the diameter of said lift cord; and a guiding surface disposed so that rotation of said cylinder so as to unwrap said lift cord from said cylinder causes said lift cord, while unwrapping, to bear against said guiding surface to produce a component of tension in said lift cord, parallel to the axis of said cylinder, for alone causing said cylinder to move in a second, opposite lateral direction.

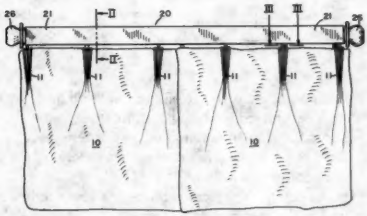
4,623,013

ADJUSTABLE DRAPE AND ROD ASSEMBLY

Gertrude Gross, 150 Liberty Ct., Sidney, Ohio 45365

Filed Aug. 27, 1984, Ser. No. 645,033
Int. Cl.[4] A47H *5/00*
U.S. Cl. 160—345 **1 Claim**

1. An adjustable drape and rod assembly comprising:
a drapery rod consisting of a hollow drapery rod casing the underside of which is provided with an open channel throughout the entire length of said rod casing,
a plurality of movable hook holders disposed within said rod casing and each of said hook holders consisting of:
a pair of roller wheels disposed within said rod casing, and each of said roller wheels provided with a central circular opening throughout,
a spacer disposed between each of said pair of roller wheels, and said spacer being provided with a circular hollow opening throughout,
a tubular axle extending through said circular hollow openings in said spacer and said roller wheels, so that said tubular axle can freely rotate within said spacer and said wheels, and said wheels can freely rotate around said axle permitting maximum rotational mobility to the said movable hook holders,
a hook extention attached to and extending downward from each of said spacers, said hook extention extending through said open channel in said rod casing and terminating in a hooked end portion;
a hanging pleated reversible drape,
a plurality of sewed, folded pleats spaced along the entire length of the top portion of said drape, and each of said folded pleats being held together by a securely sewed seam along the entire length of said folded pleat,



an individual hanging ring sewed at one point only on the rear side on each of said securely sewed seams on each of said sewed folded pleats on said top portion of said drape and each ring being designed to receive and hang from said hooked end portion of said hook extension extending from said movable hook holder upon said rod and the point at which said hanging ring is sewed to said seam on said pleat will be determined by the size of said hanging ring and the length of said hooked extension and said hooked end portion so that when said hooked end portion is hooked within said hanging ring, said hanging ring will remain below the top of said drape and nonvisable when viewed from the front,
eyelet openings cut in said drape immediately above the point at which each of said rings are sewn to said pleated seam on said drape top portion and said eyelet openings being sized to permit said hanging rings to be pushed through said eyelet openings to the opposite side of said drape thus making said drape reversible for hanging purposes by permitting said hanging rings to always remain on the rear side of said drape and said hanging rings nonvisable when viewed from the front of said drape.

4,623,014

PROCESS FOR THE PRODUCTION OF PRECISION CASTINGS

Fritz Faessler, Limburgerhof, and Siegmund Stadler, Dudenhofen, both of Fed. Rep. of Germany, assignors to Giulini Chemie GmbH, Ludwigshafen am Rhein, Fed. Rep. of Germany

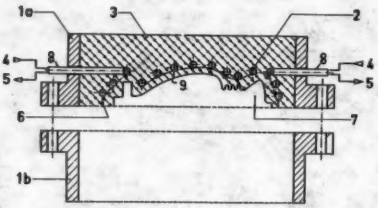
Filed Jun. 4, 1984, Ser. No. 617,004
Claims priority, application Fed. Rep. of Germany, Jun. 4, 1983, 3320309
The portion of the term of this patent subsequent to Sep. 17, 2002, has been disclaimed.
Int. Cl.[4] B22D *9/00*
U.S. Cl. 164—7.1 **14 Claims**

1. A process for production of a precision casting by which a porous foundry mold is produced from a pattern in a molding

box out of a castable molding material, containing phosphate as the bonding agent, comprising:

(a) coating the pattern to be copied with a mold release agent and providing the molding box with a drainage having at least one duct which extends outside the molding box;

(b) pouring the molding material containing phosphate (in statu nascendi) as the bonding agent into the molding box and around a portion of the drainage which is within the molding box, and solidifying the molding material in the molding box to form a solidified mold having a mold cavity;



(c) removing the water from the solidified mold by introducing compressed gas into the drainage, whereby the pattern separates from the solidified mold, removing the pattern from the solidified mold, and then calcining the mold at a temperature of at least 250° C.;

(d) connecting the calcined mold to a vacuum line and evacuating the calcined mold; and

(e) pouring a molten metal mass into the mold while the vacuum is maintained and solidifying the molten metal.

4,623,015

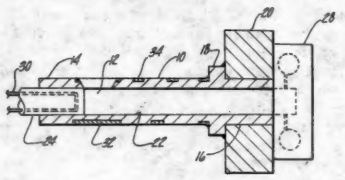
SHOT SLEEVE

Kenneth P. Zecman, P.O. Box 39009, Redford, Mich. 48239

Filed Dec. 5, 1984, Ser. No. 678,245

Int. Cl.[4] B22D *17/10*

U.S. Cl. 164—312 **4 Claims**



1. In a shot sleeve assembly of the type which comprises a metal body of first thermal conductivity having first and second ends, an axial bore extending between said ends, a radial bore defining a well mediate said ends and including a portion of said axial bore, and a piston disposed within said axial bore and reciprocal relative to said body for displacing molten metal from said well toward said second end, the improvement wherein;

a narrow elongated strip formed of a material having a second thermal conductivity substantially greater than said first thermal conductivity extends over the outer surface of said body from a location proximate said well to the vicinity of said second end for passively conveying heat away from said well,

said assembly further comprising a band formed of said second thermal conductivity material positioned around said body and intercepting said well, said strip extending in a spiral pattern from said band axially along and around said outer surface from said well to said second end.

4,623,016

DEVICE FOR PARKING THE DUMMY BAR UPSTREAM FROM THE EXTRACTION AND STRAIGHTENING GROUP

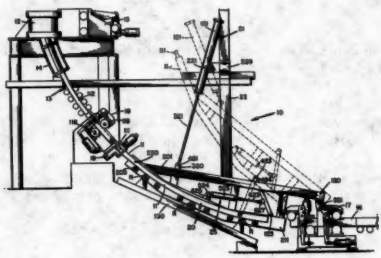
Luciano Klaucic, Ronchi Dei Legionari, Italy, assignor to Danieli & C. Officine Meccaniche S.p.A., Buttrio, Italy

Continuation-in-part of Ser. No. 379,309, May 18, 1982, abandoned. This application May 29, 1984, Ser. No. 614,636

Claims priority, application Italy, May 20, 1981, 83387 A/81

Int. Cl.[4] B22D *11/08*

U.S. Cl. 164—425 **6 Claims**



1. Parking device for rigid curved dummy bars employed in continuous casting machines with a curved roller-type casting line stretching between the ingot mold and a substantially horizontal path at the inlet of which an extraction and straightening group is located, comprising

a swinging parking structure having the same curvature as the casting line for parking a dummy bar having a free end and a fixed end pivotally attached proximal to said extraction and straightening group and rotatable around said pivotal attachment between a raised position of rest and a lowered working position,

lifting means to move the free end of said parking structure between said position of rest and the working position, and

thrust means anchored to said parking structure to force the dummy bar upwardly into the ingot mold when engaging the casting, said structure while in its working position defining rollers which form part of the casting line.

4,623,017

JOINT STRUCTURE FOR A TUBE AND A HEADER

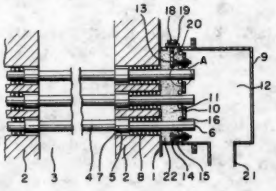
Noriyuki Oda, Chiba; Nobuyuki Kido, Fujisawa, and Keiji Muramatsu, Ichikawa, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Mar. 12, 1984, Ser. No. 588,366

Claims priority, application Japan, Mar. 15, 1983, 58-36308[U]; Mar. 15, 1983, 58-36309[U]

Int. Cl.[4] F28F *7/00*

U.S. Cl. 165—82 **18 Claims**



1. A joint structure comprising:

at least two tubes;

a support structure for said tubes;

mounting means for mounting said tubes in said support structure and for permitting relative motion therebetween;

a header for said tubes; and

dividing means disposed in said header, contacting opposite walls thereof and extending across said header, thereby dividing said header into a gas chamber and a sealing chamber, said dividing means comprising a partition plate having an opening therein, said tubes passing in order through said support structure, through said sealing chamber, through said opening of said partition plate, and into said gas chamber, open ends of said tubes being disposed in said gas chamber, wherein said sealing chamber is filled with a gas-sealing means consisting essentially of sand packed around said tubes.

4,623,018

THERMAL SYSTEM BASED ON THERMALLY COUPLED INTERMITTENT ABSORPTION HEAT PUMP CYCLES

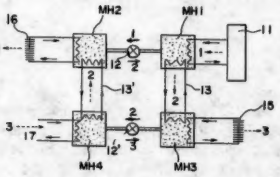
Isao Takeshita, Neyagawa; Nobuyuki Yanagihara, Hirakata; Takaharu Gamo, Fujiidera, and Yoshio Moriwaki, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jul. 9, 1984, Ser. No. 629,072

Claims priority, application Japan, Jul. 8, 1983, 58-125044; Apr. 5, 1984, 59-68807; Apr. 24, 1984, 59-82201; Apr. 24, 1984, 59-82203; May 17, 1984, 59-99043

Int. Cl.[4] F25B *15/00*; F28D *21/00*

U.S. Cl. 165—104.12 **2 Claims**



1. A combined intermittently operated heat pump device which comprises:

a first intermittently operated relatively high temperature heat cycle means including two absorbent materials having respective lower and higher absorption equilibrium pressures at respective higher and lower temperature sides and a working gas absorbable in said absorbent materials;

a second intermittently operated relatively low temperature heat cycle means including two absorbent materials having respective lower and higher absorption equilibrium pressures at respective higher and lower temperature sides and a working gas absorbable in said absorbent materials;

a heat transport means connecting said first and second heat cycle means together for supplying the heat of absorption of the lower absorption equilibrium pressure absorbent material in one of the first and second heat cycle means as a source of heat of desorption to the lower absorption equilibrium pressure absorbent in the other of the first and second heat cycle means, and simultaneously supplying the heat of absorption of the higher absorption equilibrium pressure absorbent material in said other of said first and second heat cycle means as a source of heat of desorption to the higher absorption equilibrium pressure absorbent material in said one of said first and second heat cycle means; and

the temperature of the heat of absorption of the lower equilibrium pressure absorbent material used on the high temperature side of said first heat cycle means being higher than the temperature of the heat of desorption of the lower equilibrium pressure absorbent material used on the high temperature side of said second heat cycle means, wherein the heat of absorption of said first heat cycle means flows to the second heat cycle means to heat the second heat cycle means, and the temperature of the heat of absorption of the higher absorption equilibrium pressure absorbent material used on the low temperature side of said second heat cycle means being higher than the temperature of the heat of desorption of the higher equilibrium pressure absorbent material used on the low temperature side of said first heat cycle means, whereby the heat of absorption of said second heat cycle means flow to said first heat cycle means to be taken up by the heat of desorption in said first heat cycle means.

4,623,019

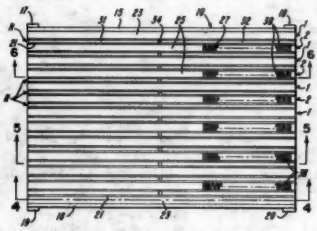
HEAT EXCHANGER WITH HEAT TRANSFER CONTROL

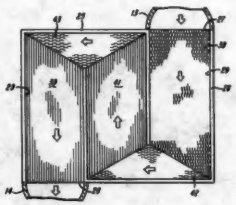
Maxwell R. Wiard, Vandalia, Ohio, assignor to United Aircraft Products, Inc., Dayton, Ohio

Filed Sep. 30, 1985, Ser. No. 781,696

Int. Cl.[4] F28F *13/00*

U.S. Cl. 165—146 **13 Claims**





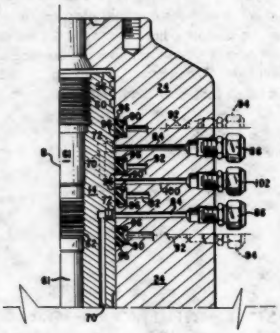
1. A multi-sided plate and fin type heat exchanger core in which plate elements, intermediately positioning spacer elements and fin strips are stacked in a layered assembly providing fluid passages for different fluids to flow in a segregated heat transfer relation to one another; characterized in that at certain locations in a stacked assembly layers include spacer elements substantially closing all sides of the heat exchangers to define between adjacent fluid passages layers of increased heat transfer resistance, said fin strips being sheet-like elements corrugated to forms specifically identifiable in terms of fins per inch, there being fin strips in at least certain resistance layers differing in terms of fins per inch from other strips in said certain resistance layers.

4,623,020

COMMUNICATION JOINT FOR USE IN A WELL

Randy P. Nichols, Humble, Tex., assignor to Cactus Wellhead Equipment Co., Inc., Houston, Tex.

Filed Sep. 25, 1984, Ser. No. 654,344
Int. Cl.[4] E21B *33/03, 33/038*
U.S. Cl. 166—88 15 Claims



12. A communication joint for use in a well, comprising:

a solid body having an exterior surface adapted to form a slidable fluid seal with a wellhead member of the well such that the solid body may slide within the wellhead member while maintaining the seal therewith;

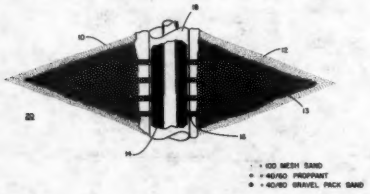
the solid body including first and second conduits positioned in and extending axially within the solid body, each conduit having the capability of providing a fluid passageway independent of the other conduit.

4,623,021

HYDRAULIC FRACTURING METHOD EMPLOYING A FINES CONTROL TECHNIQUE

Lawrence R. Stowe, Plano, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 14, 1984, Ser. No. 671,351
The portion of the term of this patent subsequent to Feb. 18, 2003, has been disclaimed.
Int. Cl.[4] E21B *43/12, 43/267, 49/00*
U.S. Cl. 166—250 15 Claims



1. A method for controlling fines or sand in an unconsolidated or loosely consolidated formation or reservoir penetrated by at least one wellbore where hydraulic fracturing is used in combination with control of the critical salinity rate and the critical fluid flow velocity comprising the steps of:

(a) placing at least one wellbore in said reservoir;

(b) hydraulically fracturing said formation via said wellbore with a fracturing fluid which creates at least one fracture;

(c) placing a proppant comprising a gravel pack into said fracture;

(d) determining the critical salinity rate and the critical fluid flow velocity of the formation or reservoir surrounding the wellbore;

(e) injecting a saline solution into the formation or reservoir at a velocity exceeding the critical fluid flow velocity and at a saline concentration sufficient to cause the fines or particles to be transferred and fixed deep within the formation or reservoir without plugging the formation, fracture, or wellbore; and

(f) producing a hydrocarbonaceous fluid from the formation or reservoir at a velocity such that the critical flow velocity is not exceeded deep within the formation, fracture, or wellbore.

4,623,022

WELL SAND PACKING PREVENTION METHOD

Tapan Chakrabarty, and Ray Thomas, both of Calgary, Canada, assignors to Exxon Production Research Co., Houston, Tex.

Filed Dec. 6, 1984, Ser. No. 678,846
Int. Cl.[4] E21B *43/25*
U.S. Cl. 166—310 12 Claims

1. A method of preventing sand packing in a producing well completed in a zone adjacent a hydrocarbon-bearing subterranean formation, comprising the steps of:

producing fluid from the hydrocarbon-bearing formation, said fluid comprising an aqueous phase and a hydrocarbon phase; and,

simultaneously with said fluid production, injecting a sand control agent into the well adjacent the production zone at a rate to obtain a wellhead concentration of said sand control agent in said aqueous phase of said fluid of from about 10 to about 1000 ppm active, wherein said sand control agent is a quarternized acylated condensed alkanolamine of the formula:

$$[-N^{+}(R_1)(R_2)-R_3-N^{+}(R_4)(R_5)-R_6-O-R_7-]_n X_m$$

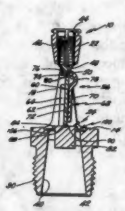
wherein R_3, R_6 and R_7 are independently aryl, alkyl or arylalkyl, R_1, R_2, R_4 and R_5 are independently hydrogen or alkyl containing 1–6 carbon atoms, X is an anion selected from the group consisting of halide, nitrate, sulfate, hydroxide and combinations thereof, n is an integer equal to the number of monomer units required to give a molecular weight of from about 3,000 to about 4,000, and m is an integer equal to the number of anions required to maintain electronic neutrality.

4,623,023

SPRINKLER HEAD

James G. Retzloff, Lansing, and Gerald W. Sanders, Hastings, both of Mich., assignors to The Viking Corporation, Hastings, Mich.

Continuation of Ser. No. 170,049, Jul. 18, 1980, Pat. No. 4,570,720. This application Sep. 18, 1985, Ser. No. 777,449
Int. Cl.[4] A62C *37/08*
U.S. Cl. 169—39 1 Claim



1. A sprinkler head comprising:

a body defining a nozzle;

a pair of arms extending upwardly from the nozzle and being joined opposite said nozzle, said arms defining a pivot point opposite said nozzle and which pivot point is offset from a central axis of said nozzle;

a cap disposed within said nozzle;

a fusible mechanical link means extending between said cap and said pivot point, said link means including a pair of rigid members held together by a temperature responsive and fusible material, one of said rigid members engaging said pivot point and the other of said rigid members engaging said cap; and

resilient means disposed between said body and said cap for creating a force which will throw said link means away from said sprinkler head when a predetermined temperature range is reached at which the temperature responsive material fuses and permits said rigid members to separate and wherein said arms are essentially unstressed so as not to create a spring force capable of throwing said cap and said link means out and away from said nozzle, said resilient means being an annular-shaped, resilient, concave, disc-like member having a peripheral edge engaging said body at said nozzle and a central aperture within which said cap is disposed, said concave, disc-like member having a nonlinear load curve with different compression rates at different compressed heights to permit thereby a wide range of latitude during assembly of the head without an adverse effect on operation.

4,623,024

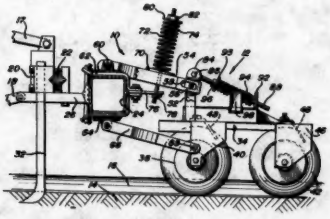
FURROW-FORMING ATTACHMENT FOR A TRACTOR

Donald D. Schlenker, Burlington, Wyo. 82411

Filed Apr. 2, 1985, Ser. No. 719,713

Int. Cl.[4] A01B *29/00, 35/28*

U.S. Cl. 172—572 **14 Claims**



9. Apparatus for forming an irrigation furrow in top soil of a crop growing field or the like comprising a towing vehicle, at least one furrow-forming attachment, and hitch means connecting the attachment to the rear of the vehicle for towing thereby over the field or the like wherein the attachment comprises a carriage having a forward roller for forming the furrow and an aft roller aligned longitudinally behind the forward roller for breaking up soil clods that may collect behind the forward roller and smoothing out the furrow walls wherein the attachment includes suspension means for providing independently adjustable resilient downward pressure on the forward and aft rollers respectively, wherein the hitch means includes upper and lower pivotal suspension links for connecting the carriage to a tool bar carried behind the towing vehicle, one of said links having a slotted connection with the carriage allowing pivotal movement of the carriage about a connection with the other of said links.

4,623,025

SOIL-DISPLACEMENT DRILL AND METHOD FOR MANUFACTURING A PILE

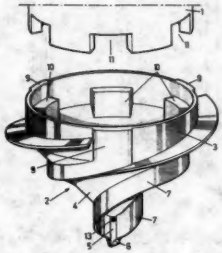
Alexander J. Verstraeten, Knokke-Heist, Belgium, assignor to Fundex, Zeebrugge, Belgium

Filed Oct. 11, 1984, Ser. No. 659,790

Claims priority, application Netherlands, Apr. 9, 1984, 8401118

Int. Cl.[4] E02D *5/36;* **E21B** *10/44*

U.S. Cl. 175—21 **17 Claims**



1. A soil-displacement drill comprising:

a drill pipe having a lower end;

a head having an upwardly extending cylindrically-shaped portion and a downwardly directed conically-shaped portion having an apex, said head being mounted on the lower end of said drill pipe;

at least two equally spaced spiral ribs appending from said head, each spiral rib defining a substantially vertical section extending from the apex of said conically-shaped portion to said cylindrically-shaped portion and a substantially horizontally extending radial section extending around a portion of said cylindrically-shaped portion as an extension of said substantially vertical section.

4,623,026

METHOD AND APPARATUS OF A SELF-ALIGNING SLEEVE FOR THE CORRECTION OF THE DIRECTION OF DEVIATED BOREHOLES

Billy W. Kemp, P.O. Box 2102, New Iberia, La. 70560, and William S. Brashear, Jr., P. O. Box 156, Moody, Tex. 76957

Continuation-in-part of Ser. No. 384,778, Jun. 3, 1982, Pat. No. 4,501,336. This application Jul. 20, 1984, Ser. No. 632,938

The portion of the term of this patent subsequent to Feb. 26, 2002, has been disclaimed.

Int. Cl.[4] E21B *7/10*

U.S. Cl. 175—76 **8 Claims**

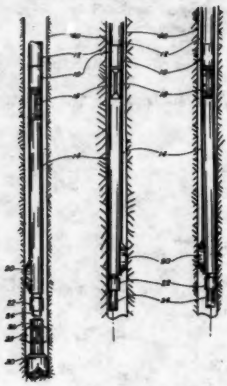
1. A self-aligning sleeve apparatus slidable over a section of flexible drill string assembly having a rotatable drill bit for correcting the direction of a deviated borehole, comprising:

a. a non-rotating tubular sleeve slidable over that member of the flexible drill string assembly adjacent the drill bit;

b. first oval shaped protrusion means attached to said sleeve for centering and stabilizing said sleeve while in the borehole;

c. second eliptically shaped protrusion means attached to said sleeve for guiding the direction of said drill string assembly, having an exterior circumference greater than first protrusion means and extending substantially around a majority of said sleeve and having vertical fluid passages

cut into the body of said protrusion means for the flow of well fluids therethrough; and



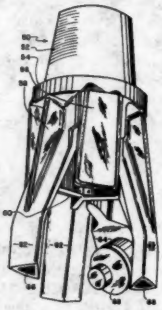
d. retaining means attached to the lower end of said flexible drill string member preventing said sleeve from sliding off of said flexible drill string member.

4,623,027

UNSEGMENTED ROTARY ROCK BIT STRUCTURE AND HYDRAULIC FITTING

Edward Vezirian, 110 Firwood, Irvine, Calif. 92714

Filed Jun. 17, 1985, Ser. No. 745,081
Int. Cl.[4] E21B *10/18*
U.S. Cl. 175—340 **9 Claims**



1. An unsegmented rotary rock bit structure and hydraulic fitting comprising:

a circular flange having a first flat side and a second side opposite to said first side,

a male threaded nipple extending normally and centrally from said first side of said circular flange,

a plurality of spaced apart leaf-spring members cantilevered normally from said second side of said circular flange,

a plurality of tubular members of sector-shaped cross section depending from a central portion of said second side of said circular flange, extending angularly from said flange and radially outward from said central portion of said second side of said flange, turning to mutually parallel paths passing between adjacent said leaf-spring members, each said tubular member having an abrupt terminal end at a predetermined uniform length,

said rock bit structure forming therewithin a hydraulic conduit adapted for laminar fluid flow, said condiut being in mutual communication with a circular port in an extended end of said nipple and with a sector shaped port in said terminal end of each of said tubular members, and

a plurality of individual journal shaft members, each further comprising;

a socket portion adapted to receive an unsupported end of one of said leaf-spring members in interference fit, and

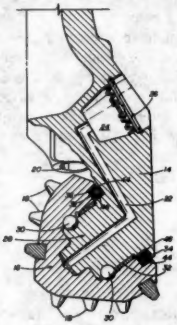
a load bearing journal shaft cantilevered from said socket portion being adapted to orient and rotatively support a rotary rock cutter in a position to extend a predetermined short distance beyond said terminal ends of said tubular members.

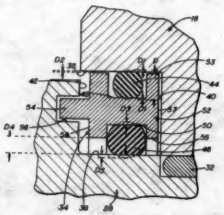
4,623,028

SEAL ASSEMBLY FOR DRILL BITS

Henry W. Murdoch, Humble, and Percy W. Schumacher, Houston, both of Tex., assignors to Reed Tool Company, Houston, Tex.

Filed Sep. 16, 1985, Ser. No. 776,452
Int. Cl.[4] E21B *10/22*
U.S. Cl. 175—371 **13 Claims**





11. In a rotary drill bit having a bearing journal, bearing means mounting a roller cutter on the bearing journal, and a lubrication system for providing lubricant to the bearing means; an improved seal means mounted between sealing surfaces on the roller cutter and bearing journal for blocking flow of lubricant outwardly past the bearing means and blocking passage of foreign matter inwardly to the bearing means, said improved seal means comprising:

a resilient static seal adjacent one of said sealing surfaces;

a sliding dynamic seal of an elastomeric material adjacent the other of said opposed sealing surfaces;

a generally rigid seal carrier between said seals and engaging said seals for exerting a force thereon to squeeze said seals against their associated bearing surfaces, said elastomeric sliding seal being squeezed against its associated sealing surface with a deflection less than the deflection of said static seal;

said static seal being deformed an amount at least 25% greater than the deformation of said sliding seal and said

dynamic seal being deformed an amount less than ten (10) percent of its original unrestrained thickness thereby to accommodate wobbling of said roller cutter on said journal; and

means to prevent relative rotation between said carrier and said static seal, and to permit relative rotation between said carrier and said sliding seal.

4,623,029

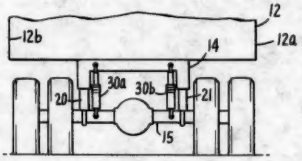
WEIGHING SYSTEM FOR VEHICLES WITH TEMPERATURE AND INCLINOMETER CORRECTION

Boyd R. Bambauer, 176 Geyer Rd., Santa Cruz, Calif. 95066; Donald H. Dunkle, Scotts Valley, and Steve Loscutoff, San Jose, both of Calif., assignors to Oceanside Electronics and Boyd R. Babauer, both of San Francisco, Calif.

Filed Aug. 22, 1985, Ser. No. 768,122

Int. Cl.[4] G01G *19/08, 3/14*

U.S. Cl. 177—137 **4 Claims**



1. For use in conjunction with a vehicle having a frame and a plurality of axles wherein each axle has a pair of springs, an improved weighing system comprising:

a pair of enclosed cylinder means mounted on each of said axles adjacent said springs and connected to said frame;

each of said enclosed cylinder means comprising two telescoping support tubes which slide vertically with respect to each other as said frame moves vertically with respect to said axles;

ultrasonic transducer means mounted inside one end of said enclosed cylinder means;

ultrasonic reflector means mounted inside the other end of said enclosed cylinder means;

temperature sensing means mounted inside said cylinder means; and

circuit means for sequentially sensing the displacement of each of said transducer means relative to its corresponding reflector means, correcting for temperatures sensed in each of enclosed cylinder means, and integrating said displacement signals to correct for any inclined terrain on which the tractor-trailer stands when weighed.

4,623,030

PIEZOELECTRIC RATIO WEIGHING DEVICE

Joe L. Portman, Jr., Boerne, and David J. Margraf, Braunfels, both of Tex., assignors to Alcor, Inc., San Antonio, Tex.

Filed Oct. 21, 1985, Ser. No. 789,515

Int. Cl.[4] G01G *3/14, 19/00;* **H01L** *41/04*

U.S. Cl. 177—210 FP **38 Claims**

1. A device for determining a ratio by weight of a first sample to a second sample comprising:

a base;

a piezoelectric driver anchored by a first part thereof to said base;

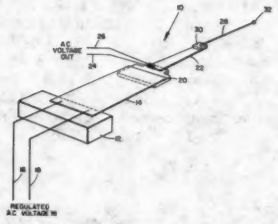
means for supplying an AC voltage to said piezoelectric driver to cause a second part of said piezoelectric driver to vibrate upon receiving said AC voltage;

a piezoelectric receiver mechanically linked to, but electrically isolated from, said piezoelectric driver to transmit vibrations from said piezoelectric driver to said piezoelectric receiver;

means for applying, directly or indirectly, said first sample or said second sample to receive said vibrations from said piezoelectric driver, said first sample or said second sample vibrating with said piezoelectric driver;

means for receiving output signals from said piezoelectric receiver, said output signals being representative of said vibrations transmitted from said piezoelectric driver;

frequency of said AC voltage from said supply means being adjusted to set overall operating frequency of said device



immediately adjacent one side of a resonant frequency, thereafter said first sample being applied to said applying means to give a first output signal from piezoelectric receiver and said second sample being applied to said applying means to give a second output signal from said piezoelectric receiver, comparing said second output to said first output to give a ratio by weight of said second sample to said first sample.

4,623,031

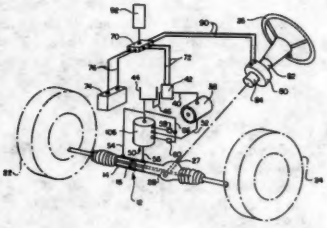
CONTROL APPARATUS FOR A STEERING SYSTEM

Gilbert H. Drutchas, Birmingham, and David J. Suttkus, Utica, both of Mich., assignors to TRW Inc., Cleveland, Ohio

Filed Feb. 22, 1985, Ser. No. 704,496

Int. Cl.[4] B62D *5/08*

U.S. Cl. 180—148 **10 Claims**



1. A steering apparatus for turning vehicle wheels in response to turning of the vehicle steering wheel, said apparatus comprising:

connection means for mechanically connecting a steering wheel to the vehicle wheels, and for turning said vehicle wheels upon turning of said steering wheel;

a fluid reservoir;

a pump having an inlet open to fluid in said reservoir and an outlet for delivering pressurized hydraulic fluid;

a hydraulic motor in fluid connection with said pump to assist said turning of said vehicle wheels and producing a fluid pressure signal in response to movement of the connection means; and

a valve in fluid communication with said pump and said hydraulic motor, said valve including fluid directing means responsive to said pressure signal for controlling fluid flow to said hydraulic motor, said fluid directing means in one condition responsive to the pressure signal for permitting the flow of fluid from said pump to said

reservoir and in another condition responsive to the pressure signal for directing fluid flow to said hydraulic motor.

2. The steering apparatus of claim 1 wherein said connection means includes a pinion gear operatively coupled to the steering wheel and a rack gear operatively coupled to a piston of said hydraulic motor.

4,623,032

METHOD OF DETECTING THE PRESENCE OF OBSTACLES IN THE OPERATION OF REMOTE-CONTROLLED MACHINES

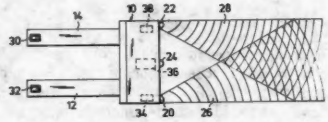
Claes Kemmer, Motala, Sweden, assignor to Aktiebolaget Bygg- och Transportekonomi, Mjolby, Sweden

Filed Apr. 1, 1985, Ser. No. 718,078

Claims priority, application Sweden, Apr. 6, 1984, 8401939

Int. Cl.[4] B60K *27/00*

U.S. Cl. 180—169 **6 Claims**



1. A method of detecting obstacles in the path of an operating remote-controlled machine having a data processing control system, transmitters, and receivers for ultra-sound waves, comprising the steps of:

transmitting ultra-sound pulses in groups continously from said transmitters in a predetermined pattern thereby forming pulse group output signals;

receiving only an input signal having a pulse pattern corresponding to the predetermined pattern of said pulse group output signals by the receiver; and

evaluating the received input signal by using the data processing control system for controlling the maneuvering of the vehicle, including mixing the received input signal with a reference signal of the same frequency as the output signals in each of two channels and displacing the phase of the reference signal in one channel by about 90° relative to the reference signal in the other channel.

4,623,033

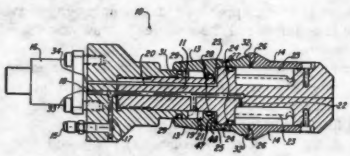
AIR RELEASE IN SEISMIC SOURCE AIR GUN

Earnest R. Harrison, Jr., Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 27, 1983, Ser. No. 499,055

Int. Cl.[4] G01V *1/04, 1/38;* H04R *1/02*

U.S. Cl. 181—120 **14 Claims**



1. A seismic source apparatus having a selectively energizible actuator and a supply of compressed air, comprising:

(a) a housing;

(b) valve means, slidably mounted around the periphery of the housing;

(c) arming means, bearing against the housing and the valve means to urge the valve means into a pre-fire position;

(d) a primary chamber for storing compressed air, formed within the housing, opening 360 degrees around the periphery thereof, being positioned beneath the valve means in its pre-fire position;

(e) a first orifice interconnecting the supply of compressed air with the actuator and the primary chamber for supplying compressed air to the primary chamber;

(f) a second orifice connected to the actuator for interconnecting to the first orifice when the actuator is energized to fire the seismic source apparatus; and

(g) a firing chamber formed between the surfaces of the housing and the valve means, connected to the second orifice for receiving compressed air when the seismic source apparatus is fired, thereby suddenly sliding the valve means away from the 360 degree opening of the primary chamber, abruptly releasing the compressed air from the primary chamber into the surrounding atmosphere.

4,623,034

LOUDSPEAKER CONSTRUCTION

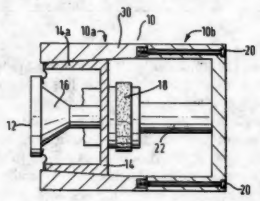
Hitoshi Saito; Hitoshi Hatori, and Kazuyuki Matsubayashi, all of Kanagawa, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 15, 1985, Ser. No. 765,923

Claims priority, application Japan, Sep. 29, 1984, 59-147488[U]

Int. Cl.[4] H05K *5/00*

U.S. Cl. 181—148 **7 Claims**



1. A loudspeaker comprising:

an enclosure having a wall defining an aperture which aperture varies in size as a function of distance along an axis of said aperture;

a transducer unit having a frame whose outside size varies as a function of distance along an axis of said transducer unit, said variation being opposite and equal to the variation in said aperture such that said transducer may be smoothly and securely fitted within said aperture; and

means for pressing the outside of said transducer unit against said aperture wall.

4,623,035

MUFFLER OF THE SOUND REFLECTING TYPE FOR USE WITH INTERNAL COMBUSTION ENGINES

Kurt Schad, and Hans-Joachim Gora, both of Bischofsheim, Fed. Rep. of Germany, assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 22, 1985, Ser. No. 704,684

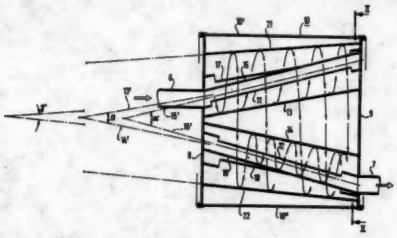
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1984, 3406282

Int. Cl.[4] F01N *1/08*

U.S. Cl. 181—274 **27 Claims**

1. Baffle silencer for internal combustion engines, comprising an enclosed housing which is provided with inlet and outlet pipe connections and in which are arranged in an axial direction at least two partially overlapping tubes, one of which is connected to the inlet pipe connection and comprises an open zone on its circumference through which the exhaust gases pass from the inlet pipe connection into the interior of the housing, and the other of which is connected to the outlet pipe connection and comprises on its circumference an open zone through which the exhaust gases pass out of the housing to the

outlet pipe connection, characterized by the open zones being provided only on the sides opposite the respective other tube, first sound reflecting shells arranged respectively opposite the



open zones and second sound reflecting shells disposed respectively opposite the first sound reflecting shells on the side of the tubes remote from the open zones.

4,623,036
ELECTRO SEAT
Walter Pondorfer, A - 9991 Dölsach -Römerweg 1, Tirol, Austria
Filed Jul. 12, 1985, Ser. No. 754,855
Int. Cl.[4] E04G *3/10*
U.S. Cl. 182—142 **5 Claims**

1. Hanging stage resembling a hoisting cage, especially for workers on tower roofs, pylons and the like, equipped with a supporting device preferably designed as a seat for one workman; the device ascending and descending on a single rope and by preferance suspended from a tower and hence free to swing, comprising a motor attached to the supporting device, turning a drive shaft around which the rope is looped, thus raising and lowering the supporting device by means of the motor along the rope, and wherein a freewheel by-pass roller equipped with ring-shaped grooves for receiving the rope is incorporated next to the driving shaft.

4,623,037
DETACHABLE-GAFF POLE CLIMBER
William J. Kincaid, 929 Brass Way, Encinitas, Calif. 92024
Filed Nov. 14, 1985, Ser. No. 797,931
Int. Cl.[4] A63B *27/00*
U.S. Cl. 182—221 **7 Claims**

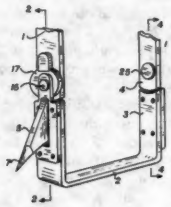
1. A climbing device securable to the foot and leg of the user which comprises:

a pair of upright members respectively securable to either side of the user's lower leg;

a generally U-shaped stirrup;

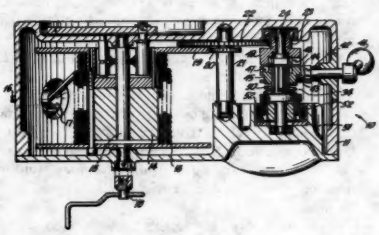
means for rotatively securing the upper ends of the stirrup to the lower ends of said upright members at ankle level;

a gaff having a connecting base and a pointed tip extending from said base; and



means for releasably attaching the base of the gaff to one side of said stirrup.

4,623,038
PORTABLE ESCAPE DEVICE
Enzo Stancato, 33 Windy Knolls, Greenwich, Conn. 06830
Filed Jun. 4, 1985, Ser. No. 741,528
Int. Cl.[4] A62B *1/10*
U.S. Cl. 182—239 **8 Claims**



1. A portable escape device capable of providing a means of safe descent from any tall structure, said devise comprising:

(a) a housing formed to define an internal cavity;

(b) a first axle structurally mounted for rotational movement within said internal cavity formed by said housing;

(c) a drum structurally mounted for rotational movement upon said first axle;

(d) a cable having one end thereof structurally affixed to said drum and the remainder of said cable then wound about said drum with the unaffixed end of said cable protruding outside said housing of said device, said cable being capable of being unwound from about said drum and in so doing, causing said drum and said first axles to rotate about their axes;

(e) a gear train array wherein a first gear of said gear train array is structurally axially affixed for rotational movement about said first axle and a second gear of said gear train array is structurally axially affixed for rotational movement about a second axle, said gear train array being such that the rotational movement of said first axle about its axis is imparted as rotational movement to said second axle;

(f) a first braking mechanism selectively actuated for controlling the rotational movement of said first axle, said drum structurally mounted for rotational movement about said first axle and thus the releasing from said device of said cable; and

(g) a second braking mechanism selectively actuated for controlling rotational movement of said second axle and thus through the mechanical interrelationship of said second axle by way of said gear train array with said first axle and said drum structurally mounted for rotational

movement about said fixed axle, there is achieved additional selective braking, said second braking mechanism comprising;

i. A coupling member axially mounted for symmetrical rotational movement about said second axle, said coupling member having formed about its exposed facial surface that is perpendicular to its axis of rotational movement indents symmetrically positioned about its circumference;

ii. A meshing member axially aligned with said second axle and said coupling member, said meshing member having formed about its exposed facial surface that is perpendicular to its axis of rotational movement and which is immediately adjacent to said coupling member indents symmetrically positioned about the circumference of said meshing member, such that the indents of said meshing member mechanically interfit with the indents of said coupling member upon the selective mechanical positioning of said meshing member into contact with said coupling member;

iii. Alignment member axially positioned along the axis of said meshing member, said alignment member having symmetrically positioned about its surface raised track member, said alignment member with its raised track members being in mechanical interfit with said meshing member such that said meshing member is capable of selective movement parallel to the axis of said alignment member while due to said mechanical interfit with said alignment member rotational movement of said meshing member will in fact impart rotational movement to said alignment member;

iv. A fly wheel axially aligned and structurally affixed to said alignment member;

v. Bar members symmetrically positioned about said fly wheel and protruding outward parallel to the rotational axis of said fly wheel from the surface of said fly wheel facing opposite to that of said alignment member;

vi. A brake housing structurally mounted within said housing of said escape device axially aligned with said fly wheel;

vii. Brake members symmetrically positioned within said brake housing in mechanical interfit with said bar members such that upon rotational movement of said fly wheel about its axis said brake members are caused to axially rotate within said brake housing and through centrifugal force said brake members are caused to come into mechanical contact with said brake housing thereby initiating frictional contact there between and thus achieve a means of braking as related to said portable escape device; and

viii. An actuation lever structurally mounted through the wall of said housing such that the interior portion of said actuation lever is in mechanical interfit with said meshing member while the exterior portion of said actuation lever is capable of being actuated by a party utilizing said portable escape device, said actuation lever being such as to be capable of causing the selected movement of said meshing member parallel to the axis of said meshing member so as to cause the selected engagment or disengagement of said meshing member with said coupling member through the structural interfit or disengagement of the indents associated with said coupling member and said meshing member.

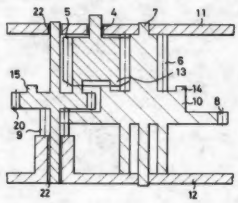
4,623,039

SPRING DRIVE

Shunichi Itoh, Souka, Japan, assignor to Nikken Industries Corp., Tokyo, Japan

Filed Dec. 20, 1984, Ser. No. 684,365
Claims priority, application Japan, Dec. 1, 1984, 59-181561
Int. Cl.[4] F03G *1/08;* A63H *29/04, 31/00*
U.S. Cl. 185—39 **4 Claims**

1. A spring drive for use in a moving toy comprising a windup pinion , a spring windup shaft having a gear meshing with the windup pinion, a large gear provided around the spring windup shaft, a drive pinion always meshing with the large gear, and a spur gear integrally formed with the drive pinion, wherein a stepped portion having a larger diameter



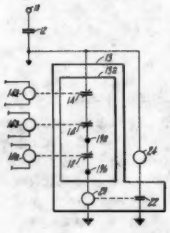
than that of the gear is formed between the gear of the spring windup shaft and the large gear, and one end of the windup pinion is supported by the stepped portion and the spur gear integrally formed with the drive pinion.

4,623,040

METHOD AND APPARATUS FOR REDUCING ELEVATOR SERVICE CALLS

Robert E. Hall, Singer Island, Fla., and Charles Whynacht, Glastonbury, Conn., assignors to Otis Elevator Corporation, Farmington, Conn.

Filed Mar. 4, 1985, Ser. No. 708,195
Int. Cl.[4] B66B *5/02*
U.S. Cl. 187—29 R **2 Claims**



1. Apparatus for reducing unnecessary elevator service calls, comprising:

logic means, responsive to a demand signal indicative of a command-to-go issued to an elevator car, responsive to a car door closed signal indicative of said car's door being closed, and responsive to a hoistway door ajar signal indicative of a hoistway door being ajar, said logic means providing an output signal whenever said demand, car door closed, and hoistway door ajar signals are simultaneously presented to said logic means; and

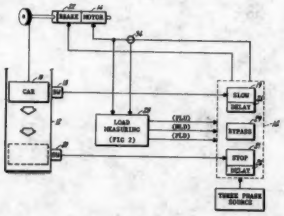
timer means, responsive to said output signal for providing a car door open signal for cycling open and closed said car door and said hoistway door only after said output signal has been continuously presented to said timer means for a selected period.

4,623,041

ELEVATOR LOAD MEASURING

Karl Horbrügger, and Jurgen Schlotter, both of Berlin, Fed. Rep. of Germany, assignors to Otis Elevator Company, Farmington, Conn.

Filed Oct. 22, 1984, Ser. No. 663,529
Int. Cl.[4] B66B *5/00*
U.S. Cl. 187—29 R 5 Claims



1. A load measuring circuit (28) for an elevator system having a motor (14) that is energized by a three phase (30–32) AC bus for moving a car (10) up and down in a hoistway (12), characterized by:

current sensing means comprising a ring transducer (34) operated in saturation and driving a Schmitt trigger (36) in saturation for providing a first square wave in sync with the instantaneous current through one of the lines (32) of the AC bus;

a resistor network (38) connected to the three lines (30–32) of the AC bus for providing an artificial ground (40);

voltage sensing means comprising an opto coupler (42) operated in saturation to provide a second square wave in sync with the instantaneous voltage between the one line (32) of the AC bus and the ground (40); and

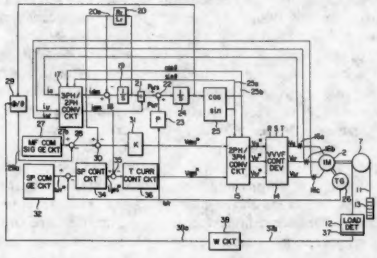
phase angle means comprising an exclusive OR gate (44) connected to the current sensing means and to the voltage sensing means for providing a phase angle signal (45) in proportion to the phase angle between the voltage and the current in the one line (32), wherein the phase angle signal is a series of marks and the mark:space ratio is proportional to the phase angle between the voltage and the current in the one line (32).

4,623,042

ELEVATOR CONTROL APPARATUS

Hiroshi Kamaike, Inazawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 26, 1985, Ser. No. 705,700
Claims priority, application Japan, Feb. 29, 1984, 59-38212
Int. Cl.[4] B66B *5/00*
U.S. Cl. 187—29 R 10 Claims



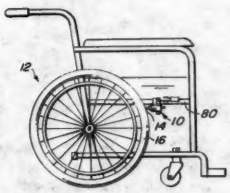
1. In an elevator control apparatus wherein a primary current of an induction motor is controlled separately for a component parallel to a secondary interlinking magnetic flux and a component orthogonal thereto; an elevator control apparatus comprising means to generate a correction signal having a predetermined frequency, phase and magnitude which cancel a magnetic flux ripple of the induction motor attributed to a shaft deflection of a hoisting machine caused by action of an elevator load, the correction signal from said means being superposed on either of the components parallel and orthogonal to the secondary interlinking magnetic flux so as to control the primary current.

4,623,043

AUTOMATIC WHEEL CHAIR BRAKE

John Babilas, 170 Newell St., Brooklyn, N.Y. 11222

Filed Feb. 26, 1985, Ser. No. 705,871
Int. Cl.[4] B60T *1/04*
U.S. Cl. 188—2 F 5 Claims



1. An automatic wheel chair brake acting upon a rim of one of the wheels of the wheel chair, comprising:

a brake shoe for locking against the rim of the wheel;

a manually operated brake system for engaging the brake shoe and having a manual operating lever movable between a locked position and an unlocked position;

an automatic brake system also engaging the brake shoe and including an automatic actuating arm positioned with respect to the wheel chair such that when a user sits on the wheel chair the brake shoe is unlocked regardless of the position of the manual operating lever, and when a user rises from the wheel chair the brake shoe is locked, regardless of the position of the manual operating lever;

wherein said manually operated brake system comprises an operating lever which is centrally pivoted; a cam plate having a cam opening which moves in a vertical plane when said operating lever is actuated; a sliding plate with a protrusion which projects into said cam opening in said cam plate whereby said sliding plate moves laterally in a horizontal plane when said cam plate moves up and down; a brake actuating spring which is compressed when said sliding plate moves in a forward direction; a brake shoe plate whibh biased in a forward direction when said brake actuating spring is compressed; a brake shoe integral to said brake shoe plate, wherein said brake shoe engages said rim of said wheel chair when said brake shoe is laterally biased; and a brake shoe return spring that returns said brake shoe plate and said integral brake shoe to an unlocked position when biasing pressure is released by the return of said operating lever to an unlocked position.

4,623,044

BRAKE APPARATUS

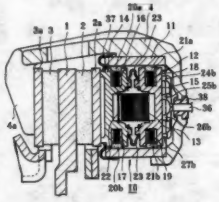
Ryuji Ohta, Kamifukuoka, and Michio Kobayashi, Hiki, both of Japan, assignors to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Dec. 14, 1984, Ser. No. 682,040
Claims priority, application Japan, Dec. 22, 1983, 58-240880; Dec. 24, 1983, 58-243096; Dec. 27, 1983, 58-244667
Int. Cl.[4] B16D *65/21*
U.S. Cl. 188—72.1 16 Claims

1. A disc brake apparatus having an actuator mechanism for bringing a friction member into tight contact with a disc braking member so as to obtain a braking force, said actuator mechanism comprising:

a moving piezoceramic member which can be extended/-contracted along an urging direction of said friction member;

a pair of holders respectively disposed between corresponding ends of said friction member and said moving piezoceramic member and at a rear end of said piezoceramic member, said holders being translatable along said direction; and



a pair of restraining means which are respectively mounted on said pair of holders and which comprises restraining piezoceramic members for selectively restraining movement of said holders and said moving piezoceramic member with respect to a fixing means in a direction parallel to the urging direction.

4,623,045

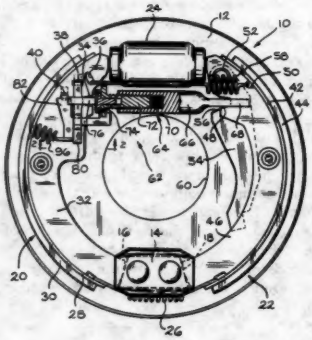
AUTOMATIC BRAKE ADJUSTING MECHANISM

Anthony C. Evans, Northville, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

Filed Jul. 13, 1984, Ser. No. 630,569

Int. Cl.[4] F16D 65/56

U.S. Cl. 188—79.5 P **12 Claims**



1. In a drum brake having a pair of brake shoes, an automatic brake adjusting mechanism comprising:

a variable length strut disposed between and engaging the brake shoes,

a first lever having a first pivotal connection to one of the brake shoes and engaged by said strut,

a second lever having a second pivotal connection to the one brake shoe and engaging said strut,

said levers being engageable with each other, and

means connected to one of said levers for biasing said second lever into engagement with said strut.

4,623,046

AUTOMATIC ADJUSTER FOR DUO-SERVO INTERNAL SHOE DRUM BRAKES

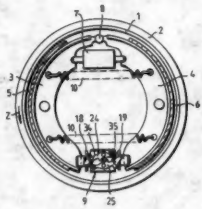
John R. Barnett, Wellesbourne, and Eric C. Hales, Solihull, both of United Kingdom, assignors to Automotive Products plc, Leamington Spa, England

Filed Jul. 12, 1985, Ser. No. 754,083

Claims priority, application United Kingdom, Jul. 21, 1984, 8418638

Int. Cl.[4] F16D 65/56

U.S. Cl. 188—79.5 GT **4 Claims**



1. A duo-servo brake comprising a brake drum, a stationary backplate, a pair of arcuate internal brake shoes for engagement with the drum, means between one pair of opposed ends of the brake shoes for braking actuation of the shoes, first spring means for returning the shoes to a clearance position after braking actuation, and automatic operating means located between the other pair of opposed shoe ends for adjusting the clearance between the shoes and the drum said automatic means including a housing secured to the backplate, a hollow shaft axially slidable relative to the housing, a pair of coaxial sleeves rotatably mounted within the hollow shaft and in abutting relationship therewith, a pair of coaxial screw-threaded adjusters each mounted in screw-threaded engagement with a corresponding internal screw-threaded portion of an associated sleeve with opposed ends of the adjusters in non-rotatable engagement with an end of one of said brake shoes so that the location of the brake shoes relative to the internal surface of the brake drum is controlled by the distance apart of the opposed ends of the adjusters, a pair of ratchet toothed adjuster wheels attached coaxially one to each of the sleeves, an associated pair of adjuster plates one for each wheel, each plate pivotally mounted on the housing, each plate having a pawl for engagement with the teeth on an associated adjuster wheel which can thereby be rotated, an adjuster pin attached to the hollow shaft and projecting radially therefrom for engagement with one or other of a pair of abutments, one abutment on each adjuster plate, second spring means for rotatably urging the adjuster plates into contact with the pin, the operation of the automatic operating adjusting means being such that movement of either of the shoes circumferentially caused by drag from the drum upon brake actuation applies an axial load to the adjusting means which is transmitted by the screw-threaded adjusters, associated sleeves and abutting hollow shaft to the other of the brake shoes, relative axial movement of the hollow shaft with respect to the housing causing the pin attached thereto to engage an abutment on one or other of the adjuster plates to effect rotation thereof, the rotation being such that a predetermined degree of brake wear will cause the pawl on the rotated adjuster plate to ride over a tooth on the associated adjuster wheel, subsequent relief of the axial load causing the adjuster plate to return under the action of said second spring means, the return movement causing the pawl to rotate the adjuster wheel whereby the internally screw-threaded sleeve turns relative to its associated screw-threaded adjuster to effect an increase in the distance apart of the opposed ends of the adjusters thereby automatically adjusting the clearance between one or other of the shoes and the drum, centering means being provided for centralizing the hollow shaft with respect to the housing upon release of the brake, said centering means

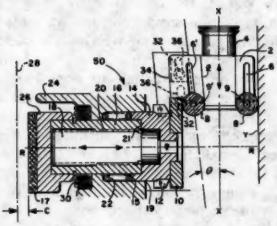
including a recess formed transversely on the external surface of the hollow shaft, a member normally in engagement with each side of the recess and restrained from axial movement relative to the housing, third spring means for urging the member radially inwardly of the hollow shaft into said engagement, the recess being so formed that upon movement of the hollow shaft axially in either direction under load the member is moved so that it is disengaged from one side of the recess and displaced radially outwardly of the shaft against the third spring means, the third spring means applying a force to the engaged side of the recess so that when the said load is removed the member causes axial return movement of the hollow shaft to restore the member into engagement with both sides of the recess.

4,623,047

AUTOMATIC BRAKE ADJUSTMENT ASSEMBLY

Charles W. Kleinhagen, Jr., Battle Creek, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Nov. 15, 1985, Ser. No. 798,499
Int. Cl.[4] F16D *65/38*
U.S. Cl. 188—196 BA **6 Claims**



1. An automatic brake adjustment assembly for maintaining a substantially constant desired clearance between a frictional brake lining and an object to be braked, in the brake released condition, said assembly comprising:

a cam member axially moveable in opposite directions in response to application and release of the brake,

a cage member carried by the cam member,

a shaft or piston member mounted for rotation and for reciprocal axial movement along a frame,

a nut member disposed coaxially about the piston member, said nut member operatively connected to the brake lining and having at least a portion thereof threadingly engaged with the shaft member for rotation and for reciprocal axial movement therewith relative the frame,

a gear member operative to rotate the shaft member,

a cam follower secured to the shaft member and operative to move the shaft member and the gear member axially relative the frame in response to application of the brake,

means for biasing the cam follower against the cam member,

gear rotation means operative to engage the gear member,

means for holding the gear rotation means loosely to the cage member in the brake released condition,

and means for providing increased restraint upon the gear rotation means sufficient to rotate the gear member upon application of the brake,

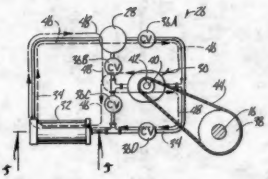
said assembly operable such that, upon application of the brake, the cam member urges the cam follower and the gear member and the shaft member axially for a distance sufficient to cause the nut member to move the brake lining into braking engagement with the object whilst the means for holding the gear rotation means increases restraint thereupon sufficiently to enable the gear rotation member to rotate the gear member and enable the gear member to rotate the shaft member causing the nut member to advance the lining towards the object a distance sufficient to maintain the desired clearance therebeween in the brake released condition and said brake rotation means is operative to slip relative to the gear member to prevent further advancement of nut member relative to the shaft member towards the object upon braking engagement therebetween.

4,623,048

GOVERNOR FOR CONTROLLING ROTATIONAL SPEED

James A. Rusk, 11322 Blue Ridge Blvd. Apt. 2, Kansas City, Mo. 64134

Filed Sep. 28, 1984, Ser. No. 655,894
Int. Cl.[4] F16F *57/00*; A63G *1/12*
U.S. Cl. 188—272 **7 Claims**



1. A hydraulic governor for controlling the rotational speed of a shaft rotating continuously in one direction, comprising:

a fluid reservoir containing hydraulic fluid and having inlet and outlet ports;

a pump having an inlet port in fluid communication with said outlet port of said reservoir and having an outlet port;

a valve housing having an internal compartment with a fluid inlet in communication with said outlet port of said pump and a fluid outlet in communication with said inlet port of said reservoir;

valve means slidably mounted within said valve housing for movement between a first open position and a second closed position;

said pump being operatively connected to said shaft such that rotation of said shaft activates said pump;

said valve means moving automatically to said closed position when the rotational speed of said shaft reaches a first predetermined level; and

hysteresis means for automatically delaying the movement of said valve means from said closed position to said open position upon reduction of the rotational speed of said shaft from said first predetermined level until the rotational speed of said shaft is further reduced to a second predetermined level such that the force required to maintain the rotational speed of said shaft between said first and second levels is greater when said valve means is in said closed position than when said valve means is in said open position.

4,623,049

DUAL MODE SHOCK ABSORBER AND METHOD

Steven M. Warren, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Aug. 1, 1985, Ser. No. 761,515
Int. Cl.[4] F16F *9/48, 9/50*
U.S. Cl. 188—281 **17 Claims**

1. A dual mode shock absorber, comprising:

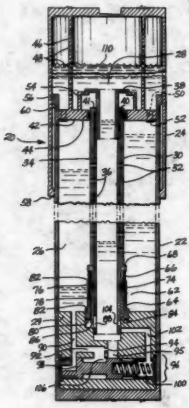
first and second generally tubular members positioned telescopically with respect to each other, said members defining a pressure chamber and a reserve chamber therebetween;

first and second passageway means for providing first and second metered hydraulic orifice areas, respectively, between said chambers;

closure means for closing said first orifice area; said closure

means having an open position in which it allows flow of hydraulic fluid through said first orifice area, and a closed position in which it blocks such flow; and

releasable latch means for locking the closure means in its open position; said latch means being automatically releasable, to allow the closure means to move into its closed position, in response to higher pressure in the reserve



chamber than in the pressure chamber caused by extension of said members relative to each other;

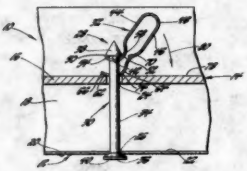
said shock absorber having a first mode of operation in which both such orifice areas are open during an initial retraction of said members relative to each other, and a second mode of operation in which the first orifice area is closed by the closure means and the second orifice area is open.

4,623,050

SHOE HOLD-DOWN PIN AND SPRING CLIP

Douglas M. Copp, West Milton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 3, 1985, Ser. No. 771,839
Int. Cl.[4] F16D *51/00*
U.S. Cl. 188—340 **3 Claims**



1. In a drum brake having a backing plate and a brake shoe assembly, the brake shoe assembly having a shoe web, and hold-down mechanism for holding the brake shoe assembly on the backing plate while accommodating brake actuation and release movements of the brake shoe assembly relative to the backing plate, the hold-down mechanism comprising:

a hold-down pin having a pin shaft extending through an opening in the backing plate and a corresponding opening in the shoe web, said pin having a first head on one pin end locating said pin axially relative to the backing plate and a second head on the other pin end positioned beyond the shoe web opening;

and a removable over-center spring clip resiliently securing said pin to said backing plate and said shoe web, said spring clip comprising:

a reversely bent leaf spring forming a top section and a bottom section and a primary spring section joining said top and bottom sections at the reverse bend;

said top section having a slot formed therein at the spring end opposite said primary spring section to define a pair of fork-like fingers, said fingers being arcuately curved first toward and then away from said bottom section to define first depression means receiving said pin second head therein with said pin shaft extending through said slot;

said bottom section having a slot formed therein at the spring end opposite said primary spring section to define a pair of fork-like feet, said feet being generally S-shaped in longitudinal cross section so as to be arcuately curved first toward said fingers and then away from said fingers to form secondary spring sections defining second depression means through which said pin shaft extends, and then being recurved back toward said fingers to form cam-like foot portions defining over-center spring section means;

said fingers engaging said pin second head to exert spring force thereon from said primary spring section;

said feet receiving said pin shaft therebetween and engaging the shoe web, with initial shoe web engagement during installation of said spring clip having said cam-like foot portions engaging the shoe web and, as said spring clip is moved to receive said pin shaft further inwardly of said bottom section slot, acting to compress said primary spring section and then passing over center to permit partial expansion of said primary spring section to retain said spring clip on said pin and the shoe web, and, upon continued installation movement of said spring clip to engage the shoe web on each side of the shoe web opening through which the pin shaft extends, such engagement being by the secondary spring sections;

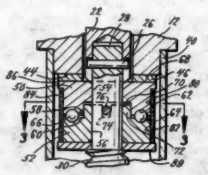
the portions of said spring clip fingers defining said first depression means engaging the portions of said spring clip feet secondary spring sections defining said second depression means upon full compression of said primary spring section with any excess compression load exerted on said spring clip then being resisted by spring action of said secondary spring sections, said over-center spring section means always being spaced further apart than said first and second depression means portions spaced apart are so that any such excess compression load exerted on said spring clip is exerted in a plane passing through said first and second depressions means and said pin shaft transversely of said spring fingers and feet.

4,623,051

LOAD BEARING, ONE-WAY, SPRING CLUTCH ASSEMBLY

Stephen A. Lochmoeller, St. Louis, Mo., assignor to Roton Products, Inc., St. Louis, Mo.

Filed May 2, 1984, Ser. No. 606,212
Int. Cl.[4] F16D *67/00*
U.S. Cl. 192—8 C **23 Claims**



1. In a load bearing assembly including a housing, a shaft rotatably mounted for rotation relative to said housing, drive means for driving said shaft in one direction, means applying a

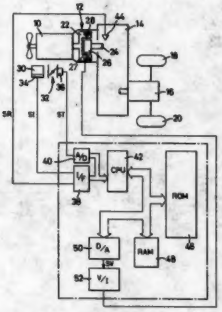
thrust load to said shaft tending to cause said shaft to rotate in the opposite direction: a load bearing, one way, spring clutch assembly comprising first and second clutch members, said clutch members mounted on said shaft for rotation about a common axis, one of said clutch members being secured to said shaft for rotation therewith, thrust load bearing means between said clutch members, spring clutch means allowing rotation of one clutch member relative to the other when said shaft is driven in said one direction, and locking said clutch members against rotation of said one clutch member relative to the other when said shaft tends to rotate in the opposite direction, and a friction plate between the other of said clutch members and said housing, said shaft being driven in said one direction at the side of said clutch assembly nearest said other clutch member.

4,623,052

METHOD AND APPARATUS FOR CONTROLLING AN ELECTROMAGNETIC CLUTCH FOR USE ON A VEHICLE

Tomoyuki Watanabe; Takashi Shigematsu, and Setsuo Tokoro, all of Susono, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Aug. 6, 1984, Ser. No. 637,837
Claims priority, application Japan, Aug. 6, 1983, 58-14426
Int. Cl.[4] B60K *27/16*
U.S. Cl. 192—21.5 6 Claims



1. A method of controlling an electromagnetic clutch which is incorporated in a power transmission system of a vehicle to transmit an output of an engine to drive wheels, and which includes a solenoid, said method comprising the steps of:

detecting a required output of said engine;

determining a target speed of said engine, based on the detected required output of the engine, and according to a predetermined relation between said target speed and said required output of the engine;

applying an electric current to said solenoid to effect an engaging action of the electromagnetic clutch to transmit a torque of the engine to the drive wheels; and

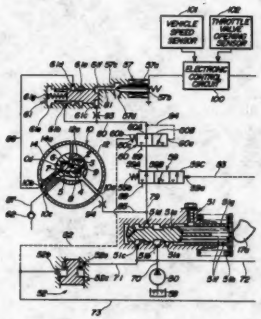
controlling a magnitude of said electric current to be applied to said solenoid during a period of said engaging action of the electromagnetic clutch, to vary the torque to be transmitted by said clutch, as a function of the controlled magnitude of said electric current, such that an actual speed of the engine coincides with the determining target speed of the engine.

4,623,053

CONTROL DEVICE FOR A DIRECT-COUPLING HYDRAULIC CLUTCH IN A HYDRAULIC TORQUE CONVERTER

Masao Nishikawa, Tokyo, Japan, assignor to Honda Giken Kogyo K.K., Tokyo, Japan

Filed Sep. 18, 1984, Ser. No. 651,793
Claims priority, application Japan, Sep. 21, 1983, 58-174678
Int. Cl.[4] F16D *43/24*
U.S. Cl. 192—0.033 4 Claims



1. In an automotive vehicle having a hydraulic torque converter having an input member, an output member, and a hydraulic direct-coupling clutch arranged between said input and output members and being operable to mechanically engage said input and output members with each other, a control device for said hydraulic direct-coupling clutch, said control device comprising:

a selector valve electrically actuatable for controlling the supply of operating fluid to said direct-coupling clutch, said selector valve having a valve body and a pressure chamber defined by one end face of said valve body;

a pilot fluid pressure source for generatig pilot fluid pressure and supplying same to said pressure chamber to act upon said one end face of said valve body of said selector valve and operable to bias said valve body to a position for supplying said operating fluid to said direct-coupling clutch;

a drain line communicating said pressure chamber of said selector valve with a zone under a lower pressure;

an electromagnetic valve arranged across said drain line and adapted to open said drain line when energized, to permit said pilot fluid pressure in said pressure chamber of said selector valve to escape to said zone under a lower pressure;

an electrical circuit adapted to supply said electromagnetic valve with electric power at least dependent upon the speed of said automotive vehicle, for energizing said electromagnetic valve;

signal pressure generating means for generating signal fluid pressure dependent upon the speed of said automotive vehicle; and

fluid pressure regulating means for regulating the magnitude of pressure of said operating fluid in response to said signal fluid pressure generated by said signal pressure generating means,

said fluid pressure regulating means being adapted to regulate the pressure of said operating fluid to values smaller than a value at which said direct-coupling clutch is rendered operative, for rendering said direct-coupling clutch inoperative irrespective of the operative state of said electromagnetic valve, when the speed of said automotive vehicle is smaller than a predetermined value.

4,623,054

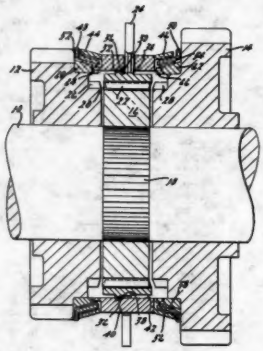
DUAL REVERSED CONE SYNCHRONIZING CLUTCH

John S. Barksdale, Ypsilanti, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jan. 28, 1985, Ser. No. 695,769

Int. Cl.[4] F16D 23/06

U.S. Cl. 192—53 E 5 Claims



1. A synchronizing clutch for driveably connecting a rotatably supported member to a shaft comprising:

clutching teeth fixed to the rotatably supported member;

a cone element having a conical outer surface mounted on the rotatably supported member for rotation relative thereto;

a hub rotatably and displaceably fixed to the shaft, located adjacent the rotatably supported member and having a set of spline teeth;

a clutch sleeve displaceably mounted on the hub for movement into engagement with the clutching teeth, having spline teeth engaged with the spline teeth of the hub and a blocking surface;

a cone arm assembly including a conical inner surface, a blocking surface adapted to contact the blocking surface of the clutch sleeve as the clutch sleeve is moved axially toward the rotatably supported member, a recess located on the radially inner surface facing the clutch sleeve, the cone arm being rotatably connected to the cone element and axially displaceable with respect to the cone element;

an intermediate clutching element rotatably fixed to the rotatably supported member, located between the conical inner surface of the cone arm and the conical outer surface of the cone element having outer and inner surfaces adapted for frictional engagement respectively with said conical surfaces; and

spring means for releasably connecting the clutch sleeve and the cone arm assembly for axial movement with the clutch sleeve and seatable in the recess of the cone arm assembly.

4,623,055

HYDRAULIC CLUTCH

Masahiro Ohkubo, Kadoma, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Neyagawa, Japan

Filed Nov. 19, 1984, Ser. No. 672,733

Claims priority, application Japan, Nov. 18, 1983, 58-178893[U]

Int. Cl.[4] F16D 25/063, 13/52

U.S. Cl. 192—85 AA 10 Claims

1. A hydraulic clutch comprising

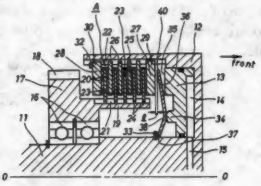
an input member,

an output member rotatable coaxially with said input member,

friction means provided between said input and output members for selectively engaging and disengaging said members from each other,

an annular hydraulic piston slidably mounted on one of said members for selectively actuating said friction means, and having an axially directed back face and

an annular coned disc spring interposed between said piston and said friction means, said spring having a radially inner peripheral end, a radially outer peripheral end, and a



piston-contacting portion radially intermediate said inner and outer peripheral ends, said inner peripheral end being supported on the piston-mounting member at a position apart from said piston, said spring having a cross-sectional shape such that said piston contacting portion is axially closest to said back face of said piston relative to both said inner peripheral end and said outer peripheral end, said piston-contacting portion moving gradually radially outwardly with increasing contact pressure by said piston.

4,623,056

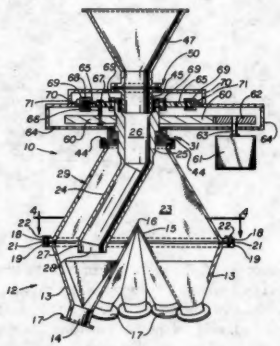
APPARATUS FOR DISTRIBUTING MATERIAL FLOW

Ronald R. Flaugher, Ludington, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 537,603, Sep. 30, 1983, abandoned. This application Mar. 14, 1986, Ser. No. 841,006

Int. Cl.[4] B65G 11/00

U.S. Cl. 193—23 10 Claims



1. An apparatus for distributing material flow comprising:

(a) a housing having an upper receiving section and a lower discharge section integral therewith,

said lower housing discharge section being defined by a plurality of fixed spouts arranged in a generally circular fashion at a radius around a central vertical axis, the spouts contacting each other at a portion of their upper end to form a cone with a common apex terminating inside the receiving section at the central axis,

(b) a chute having a receiving end and a discharge end, said chute being rotatably and axially mounted to the upper housing receiving section such that at least a portion of the chute with the chute receiving end is postioned outside the housing and at least a portion of the chute with chute

discharge end positioned outside the housing containing an annular rib portion adapted for supporting the chute on the housing receiving section, said chute extending from the outside of the housing to the inside of the housing through the housing receiving section such that the discharge end of the chute terminates inside the housing discharge section at a point below the common apex of the spouts,

(c) at least a first seal assembly contacting the annular rib portion of the chute and adapted for sealing the inside of the housing from the surrounding environment, said first seal assembly comprising a first and second seal means, a lubrication means and a bushing means, and

(d) a drive means engaging the portion of the chute outside the housing adapted to rotate the chute such that the discharge end of the chute moves in a pattern around the common apex and over the spouts such that material passed into the chute is discharged into at least one spout.

4,623,057

APPARATUS FOR FEEDING SINGLED DISC-SHAPED ELEMENTS

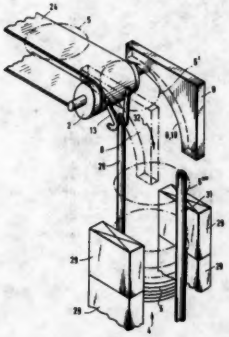
Josef Langenberg, Ascheberg-Herbern, Fed. Rep. of Germany, assignor to Firma Magnettechnik NSM GmbH, Fed. Rep. of Germany

Filed Sep. 26, 1984, Ser. No. 655,032

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1983, 3336151

Int. Cl.⁴ B65G *47/24*

U.S. Cl. 198—381 **4 Claims**



1. Apparatus for feeding singled disc-shaped magnetic elements having forward and trailing ends to a spreader magnet buffer receiving magazine which comprises a power driven conveyor means for transporting the elements in a transport direction, said conveyor means having a magnetic end roller having a rotational axis arranged adjacent the receiving magazine and a belt trained around said end roller for transporting the elements while they are lying flat on the conveyor belt, means for driving the conveyor means causing an element passing over the end roller to continue travel in substantially the same transport direction while its forward end loses contact with the conveyor belt, a curved track arranged to engage said forward end after it loses contact with the conveyor belt, and a deflector whose upper end is located approximately in a horizontal plane of the rotational axis of the end roller and tangentially thereto, said deflector being arranged to engage the trailing end of the element as it leaves the conveyor belt and prior to the element losing contact with said curved track.

4,623,058

DEVICE FOR ORIENTATION OF CHIPS

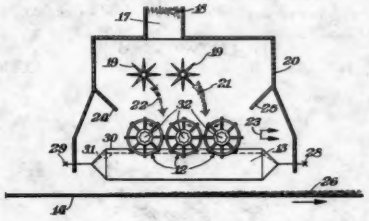
Friedrich Bossler, Weiterstadt, Fed. Rep. of Germany, assignor to Carl Schenck AG., Fed. Rep. of Germany

Filed Nov. 6, 1984, Ser. No. 668,845

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1984, 3402528

Int. Cl.⁴ B65G *47/24*

U.S. Cl. 198—382 **11 Claims**



1. A device for the orientation of chips in a preferred direction during the production of particleboard by means of parallel, vertical guide surfaces arranged at a distance from one another and rotating shafts arranged parallel and at a distance from one another, above the guide surfaces, and spacer rings and pin plates connected to rotate with the shafts, the improvement according to which each pin plate on the shafts includes a hub, a closed ring outwardly of the hub, a plurality of spaced apart radially extending ribs interconnecting the hub and the closed ring, and spaced apart pins connected to the ring extending radially outwardly thereof, the pins lying in the same plane as the ring and hub, and a tip end of each pin being equally spaced from the center of the hub.

4,623,059

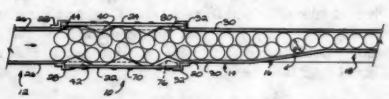
CONVEYOR SINGLE FILING SYSTEM

Vincent R. Agnew, 816 El Vecino Ave., Modesto, Calif. 95350

Continuation of Ser. No. 503,869, Jun. 13, 1983, abandoned. This application May 28, 1985, Ser. No. 738,511

Int. Cl.⁴ B65G *47/26*

U.S. Cl. 198—452 **13 Claims**



1. An article combining device for orienting conveyed articles having a diameter d so that they can be formed into a single file flow comprising:

a conveyor system including a conveyor belt,

frame means supporting the device and for forming the opposing sides of said device, said frame means being secured so as to extend parallel to said conveyor belt,

and block means, secured to said frame means and positioned above said conveyor belt, for defining a zig-zag orienting passageway along a portion of said conveyor system through which said articles will move, said block means including a pair of inlet block members, a pair of outlet block members, and at least one intermediate block member positioned therebetween, said block means being of a triangular shape and, arranged on each side of said conveyor belt with the block members positioned on each side being spaced apart a distance d equal to the diameter of the articles being handled so that as said articles move through the zig-zag orienting passageway, each will be

oriented into a flow pattern that will permit subsequent orientation into a single file formation.

4,623,060

CLEANING APPARATUS FOR CLEANING THE GLASS LINING OF PASSENGER CONVEYING MEANS

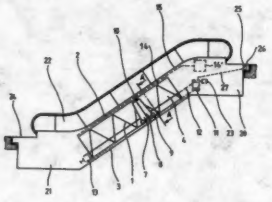
Gerhart Riilke, Vienna, Austria, assignor to Inventio AG, Hergiswil, Switzerland

Filed Dec. 7, 1984, Ser. No. 679,475

Claims priority, application Switzerland, Dec. 23, 1983, 6908/83

Int. Cl.[4] B65G *45/00*

U.S. Cl. 198—495 **12 Claims**



1. A cleaning apparatus for cleaning a glass lining of passenger conveying means, comprising:

a support structure for a passenger conveying means comprising a top flange and a base flange;

said support structure being laterally covered in laterally spaced relationship by the glass lining;

the glass lining having a predetermined height;

related guide rails mounted at said top flange and said base flange of said support structure in a substantially parallel relationship;

a cleaning carriage guided between said support structure and the glass lining by said guide rails;

cable drive means operatively connected to said cleaning carriage for reciprocatingly driving the same along said guide rails;

a wiper blade mounted at said cleaning carriage and extending normally to said guide rails;

said wiper blade wiping the glass lining across at least said predetermined height thereof while said cleaning carriage is reciprocatingly driven along said guide rails; and

cleaning liquid distributing means for distributing a cleaning liquid over the glass lining.

4,623,061

BELT CONVEYOR ARRANGEMENT

Gerald R. O. Pentith, Sturgis, Ky., assignor to Continental Conveyor and Equipment Company, Inc., Winfield, Ala.

PCT No. PCT/GB84/00043, § 371 Date Aug. 13, 1984, § 102(e) Date Aug. 13, 1984, PCT Pub. No. WO84/03272, PCT Pub. Date Aug. 30, 1984

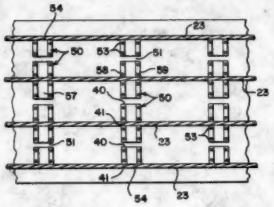
PCT Filed Feb. 16, 1984, Ser. No. 642,630

Claims priority, application United Kingdom, Feb. 18, 1983, 8304634; Dec. 8, 1983, 8332831

Int. Cl.[4] B65G *23/18*

U.S. Cl. 198—805 **8 Claims**

1. A belt conveyor arrangement comprising an elongate frame, a roller journaled at each end of said frame, at least one of said rollers being driven, an endless belt passing around said rollers and having an upper conveying run and a lower return run, said upper run of said belt having an outer surface and an inner surface, a plurality of laterally spaced and longitudinally spaced magnetic members mounted on said inner surface of said belt, said magnetic members being in alignment to define a plurality of longitudinally aligned recesses, a plurality of laterally spaced and longitudinally extending steel cables



trained about said rollers and riding in said recesses to support said belt.

4,623,062

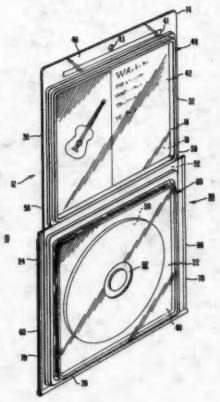
ANTITHEFT CONTAINER FOR A RECORDING MEDIUM AND METHOD FOR MANUFACTURING SAME

William Chase, and Armand Martin, both of Biddeford, Me., assignors to Shape Inc., Biddeford, Me.

Filed Nov. 12, 1985, Ser. No. 797,041

Int. Cl.[4] B65D *65/12, 85/57*

U.S. Cl. 206—311 **26 Claims**



1. An antitheft container for a recording medium, comprising:

(a) a foldable album, including—

(i) an outer, substantially flat sheet,

(ii) an inner shell having first and second means for mating when folded,

(iii) a middle insert having advertising literature thereon sealed between the inner shell and the outer sheet; and

(b) a protector member, including—

(i) a rigid shell having third mating means substantially similar in configuration to the first means,

(ii) a flap extending from the shell, and

(iii) a hinge portion formed between the shell and the flap for folding the protector member,

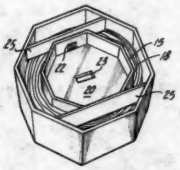
wherein, the shell of the protector member is temporarily engaged to the album via the third means mating with the second means, the flap of the protector member is folded against the outer sheet, and the side edges of the protector member extend beyond the side edges of the album and are sealed together.

4,623,063

FIBREBOARD CONTAINER FOR COIL MATERIAL

Michael L. Balkin, 30160 Orchard Lake Rd., Ste. 150, Farmington Hills, Mich. 48018

Filed Jan. 29, 1986, Ser. No. 823,578
Int. Cl.[4] B65D *5/58, 85/04*
U.S. Cl. 206—408 6 Claims



1. In a container for transporting and storing coil material such as wire and the like comprising an octagonal shaped in cross-section tubular body formed of heavy fibreboard folded into flat wall sections to provide the octagonal shape, with a closed bottom and a corresponding octagonal shaped in cross-sectional tubular core formed of heavy fibreboard folded into flat wall sections to produce the octagonal shape, with the core being coaxially positioned within the body and extending upwardly from the closed bottom to form an annular space between the body and core for receiving a coil, the improvement comprising:

a pair of vertically arranged stiff fibreboard panels positioned within the annular space upon opposite sides of the core, with each panel arranged in face to face contact with its adjacent core wall section, and with the vertical edges at the opposite ends of each panel tightly jammed, in line contact, against their adjacent body wall sections, and with the horizontal, lower edge of the panel tightly pressed against the upper portion of a coil arranged within the container;

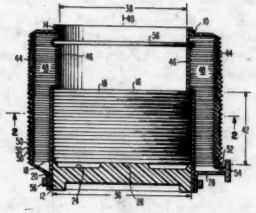
whereby the panels lock the coils in place, against shifting movement within the container, and simultaneously reinforce the core and hold the core against shifting during movements of, or impacts to, the container.

4,623,064

APPARATUS FOR STORAGE OF MOLDED DISCS

Joseph C. Ruda, Noblesville, Ind., assignor to RCA Corporation, Princeton, N.J.

Filed Sep. 3, 1985, Ser. No. 771,818
Int. Cl.[4] B65D *85/57*
U.S. Cl. 206—445 5 Claims



1. An apparatus for storage of a stack of molded discs of a predetermined outer diameter and a given height, said apparatus being comprised of:

(a) a rigid cylindrically-shaped base member having an outer diameter of about said predetermined outer diameter and having a face surface for receiving a stack of discs;

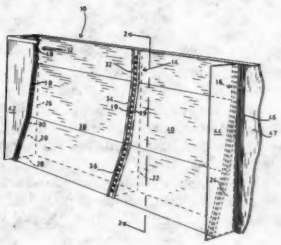
(b) an elongated tubular member having first and second end portions, a central axis and being extendable to a length at least equivalent to said given height, said tubular member having an outer wall and an inner wall connected together to form an inflatable space between said walls and means for passage of a fluid to and from said space, said inner wall of the tubular member being deflatable to a diameter larger than said predetermined diameter and being expandable to a diameter sufficient to securely engage the outer diameters of a stack of discs positioned within said tubular member; said first end of the tubular member being secured to the outer diameter of the base member with the central axis of the tubular member extending perpendicularly away from the face surface of the base member.

4,623,065

SHELVING SUPPORT STRUCTURE

James W. Cooper, Rte. 2, Box 229, Pegram, Tenn. 37143

Filed Apr. 11, 1985, Ser. No. 722,005
Int. Cl.[4] A47F *43/00*
U.S. Cl. 211—187 11 Claims



1. A vertical strut unit for demountable shelving assemblies adapted for supporting shelving units at varying angles between an upper portion and a lower portion along such strut unit, which comprises:

an elongated substantially hollow body member, having a first end and a further end, formed with a back plate and side plates extending substantially perpendicularly from said back plate, said back plate being provided with a U-shaped channel extending along said body member substantially parallel to and midway between said side plates, said body member formed with a selected contour between said first end and said further end to achieve such varying angles of such shelving units;

a face plate extending between said side plates spaced from said back plate a uniform distance, said face plate being provided with at least one longitudinal row of apertures along such strut unit for receiving such shelfing units; and

a planar spacer unit having one edge formed with a contour complementary with said contour of said body member, said contoured edge of said spacer unit being releasably received in said channel in said back plate of said body member to maintain said contour of said body member.

4,623,066

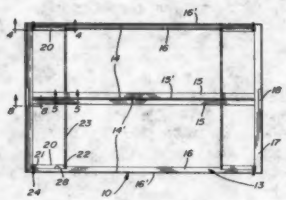
COLLAPSIBLE SUPPORT FRAME FOR PLANT CULTURE TRAYS

Normand Talbot, 732, 5iéme avenue ouest, Amos, Quebec, Canada (J9T 1P6)

Filed Jan. 25, 1985, Ser. No. 694,812
Int. Cl.[4] A47F *43/00*
U.S. Cl. 211—195 10 Claims

1. A collapsible support structure for supporting and transporting a plurality of plant culture trays, said structure comprising a rectangular frame having at least two spaced parallel support tracks for receiving end portions of culture trays therebetween, each track having outer wall means, said tracks being secured at their ends to opposed end wall means, and a retract-

able leg assembly secured on adjacent ends of said frame and pivotally connected thereto and displaceable from the underside thereof whereby said leg assembly may be displaced from a support position wherein said frame is supported elevated from a ground surface by said leg assembly to a collapsed position wherein said leg assembly is located entirely within said frame, said two pairs of support tracks being constituted by a central structural member of inverted T-shape cross-section and two outerside structural members of L-shape cross-section, each leg assembly being comprised of a pair of leg



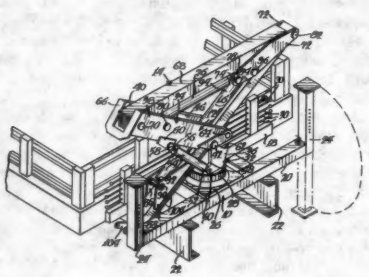
members having a connecting pivot end and a free support end, a flexible bar interconnected between said support end, a bar receiving slot having a throat opening in a bottom edge of said central structural member and dimensioned to receive a portion of said flexible bar therein, said slot sloping angularly towards said pivot end and being spaced a predetermined distance such that said throat opening is slightly forward of said flexible bar whereby said bar is flexed outwardly to enter said slot and retained captive therein to retain said leg assembly in said collapsed position and entirely within said frame.

4,623,067

COMPACT FOLDABLE CRANE

Larry J. Hejlik, Garner, Iowa, assignor to Iowa Mold Tooling Co., Inc., Garner, Iowa

Filed Dec. 4, 1984, Ser. No. 677,875
Int. Cl.[4] B66C *23/42*
U.S. Cl. 212—188 **8 Claims**



1. A compact, foldable crane for mounting on a truck or the like comprising:

inner and outer, elongated booms pivotally interconnected at adjacent ends;

a flat reciprocable motor interconnecting said booms at locations spaced from said pivotal interconnection and operative to pivot said outer boom relative to said inner boom between a first position wherein said outer boom acts as an extension of said inner boom and a second position wherein said outer boom is folded under said inner boom;

a mast comprised of a relatively short mounting section and a relatively long upright section pivotally mounted at one end to said mounting section for movement about a horizontal axis between an upright position and a lowered position, both of said upright section and said mounting section being defined by two parallel plates spaced sufficiently to permit said outer boom to pass through the space between said sections;

means pivotally connecting said inner boom, at its end remote from said outer boom, to said upright section at the end thereof opposite one end, such that said inner boom extends from said upright section in a direction opposite the direction of movement of said upright section when moving from said upright position toward said lowered position; and

a second reciprocal motor located oppositely of said booms interconnecting said section for moving said upright section between said upright and lowered position.

4,623,068

NIPPLE ASSEMBLY

John M. Brown; Donald W. Herritz, both of Reedsburg, Wis.; Barbara L. Ottinger, Newaygo, Mich., and Leland D. Westmas, Reedsburg, Wis., assignors to Gerber Products Company, Fremont, Mich.

Continuation of Ser. No. 446,845, Dec. 6, 1982, abandoned. This application Aug. 19, 1985, Ser. No. 767,233
Int. Cl.[4] A61J *9/08, 11/04*
U.S. Cl. 215—11 R **1 Claim**

1. A nursing bottle collar including a conically shaped internally threaded skirt portion for attachment to a correspondingly threaded bottle and a flange portion surrounding a central aperture, said collar adapted for holding a nipple formed with an upper lip-engaging shoulder of a diameter less than the diameter of said collar and a bottle-engaging flange of a diameter intermediate said collar diameter and said upper shoulder diameter;

the improvement comprising said flange portion being formed with a downwardly and inwardly bevelled top surface and a planar bottom surface, whereby when said nipple is disposed through said central aperture and a nursing bottle is threadably attached to said collar, said bottle-engaging flange is compressed to cause said lip-engaging shoulder to be drawn against said flange portion immediately adjacent the perimeter of said central aperture, thereby forming an obtuse angle to prevent a child's lip from being squeezed between said flange portion and said lip-engaging shoulder.

4,623,069

NIPPLE AND NURSING CONTAINER

Leonard A. White, Gurnee, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

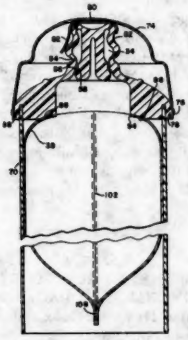
Filed Apr. 12, 1984, Ser. No. 599,301
Int. Cl.[4] A61J *9/00, 9/08, 11/04*
U.S. Cl. 215—11 R **23 Claims**

1. A nursing container comprising:

a nipple having a resiliently deformable wall defining a generally cylindrically shaped hollow outer surface, closed at one end, mounting means carrying said wall

opposite said closed end, a resilient elongated member interior of said deformable wall and depending from said closed end, said elongated member being spaced from the interior surface of the wall to define an annular space between the wall and the elongated interior member, and a plurality of dispensing apertures communicating between the annular space and the exterior, the elongated member and deformable walls cooperating to provide means for restricting the flow of fluid through select dispensing apertures;

a flexible fluid container bag having an open end and a closed end, the open end being sealed to the mounting means; and



whereby fluids can flow through the annular space and the dispensing apertures to the exterior.

14. An artificial nipple for a nursing container for a suckling infant comprising;

an elongated flexible nipple portion including a generally cylindrically-shaped hollow deformable outer wall having a substantially closed end including a plurality of dispensing apertures situated generally symmetrically about the closed end; and

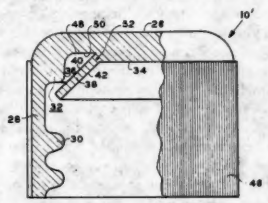
a resilient elongated member disposed interior of the deformable wall and depending from the closed end, the elongated member and deformable wall cooperating to provide means for allowing the infant to restrict flow through select dispensing apertures.

4,623,070

CLOSURE CAP

Masaji Nishikawa, Funabashi, Japan, assignor to Shibazaki Seisakusho Ltd., Tokyo, Japan

Filed Jan. 29, 1985, Ser. No. 696,224
Int. Cl.[4] B65D *53/00*
U.S. Cl. 215—329 **16 Claims**



1. A closure cap adapted for fitment to a container having a threaded neck terminating in a rim which defines an open mouth, said closure cap being formed of a molding of elastomeric material and comprising:

a top wall;

an annular skirt downwardly depending from said top wall having a closure thread formed about an inside surface thereof which cooperates with said threaded neck of said container to achieve said fitment;

a stepped projection formed generally at the inside juncture of said top wall and said annular skirt, said stepped projection containing a generally vertical surface;

sealing means for providing a gas-tight seal as said closure cap is fitted to said container, said sealing means including a flexible, annular flange projecting outwardly from an inner surface of said top wall and having sufficient length to bend around the inside radius of said rim and be compressed between the vertical surface of said stepped projection and the neck of said container to form said seal; and

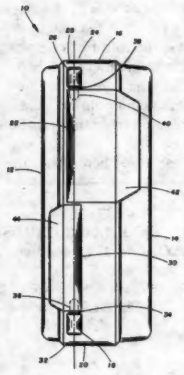
said flange extends radially outwardly beyond said stepped projection vertical wall, whereby when the closure cap is threaded onto the container, said flange has a portion which is generally horizontally oriented and received in a recess defined by said generally vertical surface of said stepped projection and said inner surface of said top wall.

4,623,071

HINGE FOR BLOW-MOLDED CASES

Donald A. Malcolm, Roanoke Rapids, N.C., assignor to W. R. Grace & Co.

Filed Oct. 30, 1985, Ser. No. 793,049
Int. Cl.[4] B65D *43/14, 51/04*
U.S. Cl. 220—337 **11 Claims**



1. A thermoplastic container comprising a body portion, a cover portion, and segmented hinge means, the hinge means further comprising:

(a) a first hinge portion near a first corner of the body portion;

(b) a second hinge portion extending from the center of the body portion and towards a second corner of the body portion, and spaced from the second corner a distance substantially equal to the sum of (1) the length of the first hinge portion and (2) the distance of the first hinge portion from the first corner of the body portion;

(c) a third hinge portion near a first corner of the cover portion; and

(d) a fourth hinge portion from the center of the cover portion and towards a second corner of the cover portion and spaced from the second corner a distance substantially equal to the sum of (1) the length of the third hinge por-

tion and (2) the distance of the third hinge portion from the first corner of the cover portion;

the first, second, third and fourth hinge portions each including fixing means to pivotally interlock the hinge means during assembly and prevent separation of the body portion and cover portion while permitting opening and closing of the container.

4,623,072

CORRUGATED CONTAINER WITH FOLDABLE FLAPS

Achim R. Lorenz, Marietta, Ga., assignor to MacMillan Bloedel Limited, Vancouver, Canada

Filed Apr. 18, 1985, Ser. No. 724,470
Int. Cl.[4] B65D *90/04*
U.S. Cl. 220—443 **8 Claims**

1. A container including a sleeve formed of a plurality of layers of a corrugated board, said corrugated board comprising a flat web and a corrugated medium, the sleeve having at least one flat side, and

at least one flat on at least one end of the sleeve, the flap extending from the flat side of the sleeve,

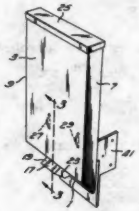
the sleeve having a fold line separating the flap from the flat side of the sleeve, the fold line comprising a strip defined by two substantially parallel cuts through the corrugated medium in each of the layers, the flat web in each of the plurality of layers being continuous and uncut across the strip, the corrugated medium positioned between the parallel cuts in each of the layers being flattened thereby permitting the flap to be bent about the fold line.

4,623,073

DISPENSER FOR CARDS

Ernest E. Hansen, P.O. Box 272, San Juan Capistrano, Calif. 92693

Filed Sep. 19, 1984, Ser. No. 651,887
Int. Cl.[4] B65H *1/00*
U.S. Cl. 221—45 **9 Claims**



7. A vendor box adapted to dispense vertically oriented cards, pamphlets, or other such items, comprising:

a box having a front wall, a rear wall, side walls, and a bottom wall which slopes downwardly from front to back;

a transverse slot formed adjacent the lower edge of said rear wall through which said cards, pamphlets or other items may be singly removed;

a finger opening at the bottom of said rear wall to facilitate manipulation of said cards, pamphlets, or other such items; and

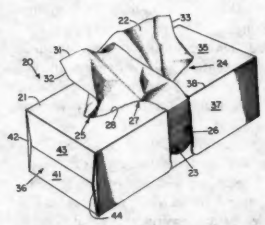
a hanger for attaching said box to a variety of supports, said hanger acting to space said box from a support so as to provide room for a finger to be inserted into said finger opening, said hanger comprising a horizontal spacer plate extending normal to said rear wall, and a vertical rear plate positioned parallel to said rear wall and depending from spacer plate; the bottom of said spacer plate, the front of said rear plate, and said rear wall forming a space in which a horizontally oriented support for said box may be retained, said spacer plate being located sufficiently above said finger opening so that said spacer plate is capable of resting on and being supported by a horizontal support while at the same time leaving the finger opening unblocked, said hanger further comprising two spaced, vertically oriented flanges extending rearwardly from said rear plate, said flanges being oriented parallel to one another and normal to said rear plate and said rear wall, said rear plate and said flanges defining a space in which a vertically oriented support for said box may be retained, so that three sides of a vertical support would be surrounded.

4,623,074

DUAL DISPENSING MODE CARTON AND CONCOMITANT PACKAGE

Donald D. Dearwester, Hamilton, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Feb. 25, 1985, Ser. No. 704,831
Int. Cl.[4] A47K *10/24;* B65H *1/00*
U.S. Cl. 221—48 **12 Claims**



1. A dispensing carton for interfolded sheets which carton comprises integral stationary means for enabling selective dual mode dispensing of said sheets through a single dispensing opening in a stationary wall portion of said carton: substantially droop-free pop-up dispensing of one sheet at a time, or group mode dispensing of a plurality of sheets as a group without having to disassociate them from each other, said carton being sized to contain a bundle of interfolded sheets, said carton having top, front, rear, bottom and end walls, said means for selective dual mode dispensing comprising means for defining a mushroom-shape dispensing opening comprising an elongate head portion which is centrally disposed in said top wall of said carton and which has a non-linear back edge, a stem portion which extends downwardly through a medial portion of said front wall of said carton, and a flared portion having arcuate edges disposed intermediate said head portion and said stem portion, said opening being configured to be sufficiently constrictive with respect to withdrawing single sheets therethrough to enable substantially droop-free pop-up dispensing of one sheet at a time, and sufficiently non-constrictive to enable withdrawal of a plurality of said interfolded sheets as a group without having to disassociate them from each other, and said head portion being so disposed that its

major axis is coextensive with the lengthwise centerline of said top wall.

4,623,075

CONTAINER FOR PRESSURIZED LIQUID

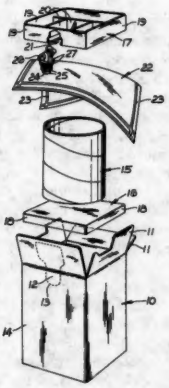
Arthur J. Riley, Stockport, England, assignor to T.P.T. Limited, Stockport, England

Filed Jan. 9, 1985, Ser. No. 690,038

Claims priority, application United Kingdom, Jun. 21, 1984, 8415900

Int. Cl.[4] B65D *35/28*

U.S. Cl. 222—95 7 Claims



1. A container for pressurised liquid comprising:

a box-like outer casing having at least four side walls and two end walls;

a flexible bag for reception of pressurised liquid, said bag being located within the outer casing and having a tap whereby the liquid may be dispensed; and

a substantially cylindrical open ended tube of inelastic material within said outer casing and encircling said bag to preclude transmission of pressure forces generated by the contents of said bag to the side walls of said outer casing and to permit transmission of said pressure forces from said bag to at least one of said end walls of said casing, said container further including a transverse platform arranged within said casing at at least one end of said tube and including at least one flange extending between said end wall of said casing and said tube to transmit pressure from said bag within said tube to said end wall of said casing.

5. A container for pressurised liquid comprising:

a box-like outer casing;

a flexible bag for reception of pressurised liquid, said bag being located within said outer casing and having a tap whereby the liquid may be dispensed; and

an enclosing sleeve of elastic material substantially surrounding said bag within said casing and having an elastic memory sufficient to counter-act the outward pressure of said bag when filled with pressurised liquid, said container further including a transverse platform positioned within said casing between one end wall thereof and said bag including at least one flange directed towards said one end wall of said casing, means defining a slot in said flange, means defining an outlet member connecting said tap to said bag and positioned within said slot so as to support said tap within said casing in a predetermined position.

4,623,076

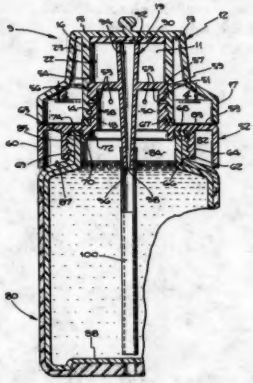
REFILLABLE CONTAINER WITH DEPRESSURIZATION MEANS

David Karpal, 165 W. Hospitality La., Suite 24, San Bernardino, Calif. 92408

Filed Mar. 4, 1985, Ser. No. 708,157

Int. Cl.[4] B67D *3/00*

U.S. Cl. 222—482 6 Claims



1. A venting type container, to relieve pressurized carbonated liquids and the like therefrom without discharging said liquid while equalizing interior container pressure with atmospheric pressure, comprising a flexible wall container having a threaded neck portion terminating in a circumferential lip defining an opening to said container; a removable dispensing cap for said container having: an integrally formed dispensing spout terminating in a circumferential lip defining an opening to said spout; an integrally formed externally threaded boss having an external and internal surface defining a central torodial type cavity with a plurality of vent holes; and an integrally formed internally threaded annular cap skirt for engaging the threads on said container, whereby the opening to said container is redefined by said vent holes and spout opening as said dispensing cap is brought into full threaded engagement with said container; and a depressurization sealing assembly having: an integral internally threaded annular assembly skirt for engaging the external threads on said boss, said annular skirt terminating in a circumferential lip defining an open internal cavity within said sealing assembly; an insert gasket received within the top of said cavity whereby the opening to said spout is sealed as said sealing assembly is brought into full threaded engagement on said boss; and a lip gasket received on said lip whereby the opening to said cavity is sealed as said sealing assembly is brought into full threaded engagement with said boss, whereby the orientation of said depressurization sealing assembly in relation to said dispensing cap assembly permits gases and not liquid within said container to vent from inside out or from outside into the container through said vent holes depending on the relative pressures within and without said container.

4,623,077

DISPENSING CLOSURE VALVE

Peter T. Swartzbaugh, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Mar. 15, 1984, Ser. No. 589,630

Int. Cl.[4] B65D *47/00*

U.S. Cl. 222—517 9 Claims

5. A dispensing closure valve for a container comprising

a stem for attachment to the container,

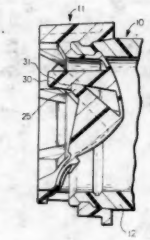
said stem having an annular wall defining an opening, and

a closure made of plastic material such that it will flex in thin cross section,

said closure having an annular wall and a radial wall engaging the free end of said stem, and a transverse wall facing inwardly of the container,

said closure and said stem having interengaging sealing surfaces,

an actuator comprising a tab extending axially from the inner surface of the transverse wall providing a handle portion for manipulation of the closure to flex the axial wall and the transverse wall and thereby permit the contents to flow between the wall of the stem and the wall of the container,



interengaging means between the tab and the transverse wall of the closure operable upon movement of the tab in a direction to open the valve to hold the valve in open position,

said interengaging means between said tab and said closure extending from said body and engaging said tab,

said interengaging means comprising an integral projection extending from the transverse wall and having a free end interengaging with said tab,

said tab including a slot defining spaced members, said projection frictionally engaging said spaced members.

4,623,078

PLANTER POPULATION REDUCTION DRIVE UNIT

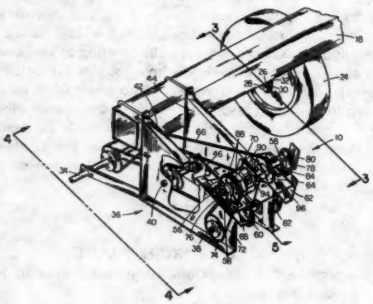
Ralph E. Weeder, Box 83, Lindsay, Nebr. 68644

Continuation-in-part of Ser. No. 288,642, Jul. 30, 1981, abandoned. This application Aug. 16, 1985, Ser. No. 766,188

The portion of the term of this patent subsequent to Nov. 5, 2002, has been disclaimed.

Int. Cl.[4] A01C *19/00*

U.S. Cl. 222—615 **4 Claims**



1. In an agricultural planter implement having an elongated tool bar and a plurality of individual planter units and a plurality of ground wheels connected to the tool bar, a population reduction drive system comprising,

first and second shafts rotatably mounted on the implement in spaced-apart relation,

means operatively connecting said second shaft to the planter units for operating said units in response to rotation of the second shaft,

a plurality of wheels of various sizes carried on said first and second shafts for rotation therewith,

a flexible drive connection member trained about a selected pair of said wheels for setting the population rate corresponding to that pair,

a third shaft rotatably mounted on the implement and having a fixed wheel secured thereon,

flexible drive means operatively connected to said fixed wheel and ground wheels for rotating said third shaft in response to rotation of said ground wheels,

a primary flexible drive connection between said third and first shafts including

a remotely actuated wrap spring clutch mounted on said third shaft,

a primary drive wheel connected to said wrap spring clutch for rotation with said third shaft when said wrap spring clutch is engaged,

a primary driven wheel on said first shaft, and

a flexible drive connection member trained around said primary drive wheel and primary driven wheel, and

a secondary flexible drive connection between said third and first shafts including,

an over running clutch mounted on said third shaft, a secondary drive wheel connected to said over running clutch for rotating said third shaft when said wrap spring clutch is disengaged,

a secondary driven wheel on said first shaft, and

a flexible drive connection member trained about said secondary drive wheel and secondary driven wheel,

said wrap spring clutch including a solenoid operatively connected thereto for disengaging said wrap spring clutch in response to actuation of said solenoid and for engaging said wrap spring clutch in response to deactuation of said solenoid.

4,623,079

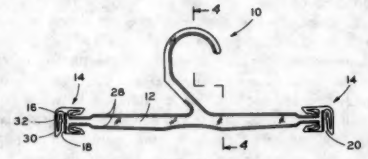
GARMENT HANGER WITH GRIP

Donald Tendrup, 32 Del Marie La., Nesconsett, N.Y. 11767, and Joseph DeVito, 7 Ingrid Ct., Hauppauge, N.Y. 11788

Filed Jan. 29, 1982, Ser. No. 344,209

Int. Cl.[4] A47G *25/36, 25/48*

U.S. Cl. 223—85 **1 Claim**



1. In a hanger of plastic construction material and of the type having a centrally located hook for being suspended from a support, a body connected to the base of said hook oriented horizontally when used, and at each of the opposite ends of said body, plural garment-engaging grips molded integral therewith, at least one said garment-engaging grip comprising a vertically oriented wall surface of said hanger extending from a location adjacent the upper edge of said body to a location at the lower edge thereof, a U-shaped configuration molded therein so as to present a first downwardly extending resilient finger and a reverse direction upwardly extending second resilient finger spaced inwardly of said first finger, said second resilient finger being located in an adjacent clearance position from said wall surface for the entire vertical length

thereof such that there is a first clearance space between one side of said second finger and said wall surface defining a garment-receiving slot therebetween and a second clearance space along said opposite side of said second finger for allowing transverse movement in said second finger in a direction away from said wall surface, said second resilient finger being movable in a direction transverse to and away from said wall surface by displacement into said second clearance space, and a bump molded on said finger in facing relation to said wall surface, and at least another said garment-engaging grip comprising a horizontally oriented wall surface of said hanger extending from a location adjacent an end edge of said body to a location inwardly thereof, a U-shaped configuration molded therein so as to present a first horizontally extending resilient finger and a reverse direction horizontal extending second resilient finger spaced inwardly of said first horizontally extending finger, said second horizontally extending finger being located in an adjacent clearance position from said horizontally oriented wall surface such that there is a first clearance space between one side of said second finger and said wall surface defining a garment-receiving slot therebetween and a second clearance space along said opposite side of said second finger for allowing transverse movement in said second finger in a direction away from said wall surface, said second resilient finger being movable in a direction transverse to and away from said wall surface by displacement into said second clearance space, and a bump molded on said finger in facing relation to said wall surface, whereby said second finger of each said garment-engaging grip is movable away from said wall surface into said second space to provide an enlarged size to said garment-receiving slot for said entire length thereof incident to the insertion of a garment therein to an extent providing sufficient bulk for said second finger to remain in gripping engagement with said inserted garment and wherein said movement of said second finger caused by said bulk obviates stress in said construction material at the connecting juncture of each said grip with said hanger.

4,623,080

TROUSER HANGER

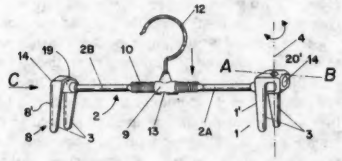
Hermann Roloff, Zentralstrasse 139, 5430 Wettingen, Switzerland

Filed Dec. 17, 1984, Ser. No. 682,074

Claims priority, application Switzerland, Dec. 27, 1983, 6925/83

Int. Cl.⁴ A47G *25/48*

U.S. Cl. 223—95 **15 Claims**



1. A trouser hanger stretchingly holding trousers at the trouser legs thereof, comprising:

a stretching rod;

a movable first holder containing a pair of stretching prongs and provided at said stretching rod;

said movable first holder being pivotably movable about a pivot axis extending substantially parallel to said pair of stretching prongs;

a rigid second holder containing a pair of stretching prongs and provided at said stretching rod;

said pairs of stretching prongs of said first holder and said second holder being insertable into the legs of the trousers;

a spring coacting with said first holder and said second holder;

said first holder and said second holder being displaceable relative to each other against the force of said spring;

each said movable first holder and said rigid second holder comprises a head member connectable to said stretching rod;

said pair of stretching prongs of said movable first holder being pivotably mounted at said head member of said movable first holder; and

said pair of stretching prongs of said rigid second holder being mounted at said head member of said rigid second holder.

4,623,081

BURSTER APPARATUS FOR CONTINUOUS FORMS

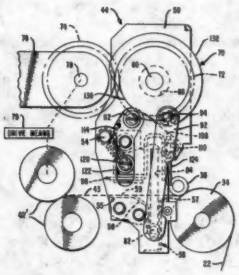
David A. Hain, Dundee, and Ian J. Walker, Fife, both of Scotland, assignors to NCR Corporation, Dayton, Ohio

Filed Nov. 1, 1985, Ser. No. 793,862

Claims priority, application United Kingdom, Jun. 26, 1985, 8516154

Int. Cl.⁴ B65H *35/10*

U.S. Cl. 225—105 **10 Claims**



1. A burster apparatus for separating into sheets a web which has transverse weakened lines formed thereon, comprising:

conveying means for conveying said web along a feed path through said apparatus;

an elongated burster member extending across said feed path and having first and second ends;

mounting means for mounting said first and second ends of said elongated burster member for movement in a plane which is substantially perpendicular to said feed path at a predetermined position in said feed path;

clamping means for clamping said web with one of said weakened lines being held in said predetermined position;

moving means for moving said clamping means between clamping and non-clamping positions; and

actuating means for individually moving said first and second ends of said elongated burster member in said plane so as to move said elongated burster member at an angle to said feed path to progressively burst said web at said weakened line at said predetermined position when said clamping means is in said clamping position;

said conveying means being effective to move a separated sheet from said web after said clamping means is moved to said non-clamping position.

4,623,082

ELECTRONIC STAPLER

Mitsuteru Kurosawa, Gumma, Japan, assignor to Max Co. Ltd., Toyko, Japan

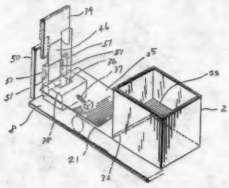
Filed May 14, 1985, Ser. No. 733,993

Int. Cl.⁴ B27F *7/31, 7/36*

U.S. Cl. 227—7 **10 Claims**

1. A power-driven stapler adapted to use staple sheets com-

prising: a cartridge accommodating portion for accommodating a staple cartridge in which are stacked multiple layers of staple sheets, each of which is prepared by connecting a multiplicity of unformed non-U-shaped staple elements by means of an adhesive; feed path defining means formed in front of said accommodating portion for introducing staple sheets from a staple cartridge accommodated in said accommodating portion from the rear end thereof and for guiding the same to the front end thereof; feed means disposed to extend from said accommodating portion to said feed path defining means for consecutively and continuously feeding out the staple sheets from the



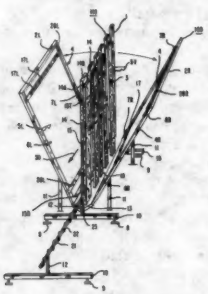
staple cartridge accommodated in said accommodating portion onto said feed path defining means; forming means arranged in front of said feed path defining means for consecutively forming the staple elements of the staple sheets into staples having a U-shape; staple driver means for driving consecutively U-shaped staples formed by said forming means; clinching means for bending the leg portions of the driven staples; electric motor drive means for driving at least said feed means, said forming means and said staple driver means; and control means for controlling the drive of said electric motor drive means in a single cycle of the clinching step.

4,623,083

PIVOTAL FIXTURE APPARATUS FOR FABRICATING BOARD ON BOARD FENCE SECTIONS

Anthony L. Pagano, 909 Raritan Ave., Highland Park, N.J. 08904

Filed Aug. 6, 1984, Ser. No. 638,242
Int. Cl.[4] B23Q *3/00*
U.S. Cl. 227—152 **18 Claims**



1. Apparatus for securing boards to stringers comprising,

a base,

a left and a right frame assembly each pivotally coupled to said base and operative in a first closed position where said right and left frames extend in the vertical plane and in a second opened position where said right and left frames form a V-shaped configuration with respect to said base,

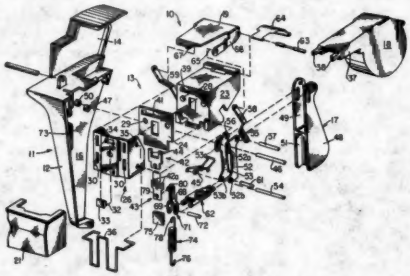
first means located on said frames for holding boards in a relatively vertical position, second means located on said frames for holding stringers in a relatively horizontal position with said stringers overlying said boards when emplaced in said frames such that when said frames are in said first closed position said stringers are between said boards to enable nailing of said stringers to said boards to complete an assembled section and exit means coupled to said base and adapted to allow said assembled section to be rolled out of said apparatus when said frames are placed in said second opened position, said exit means comprising a longitudinal extending beam directed from said base and having a plurality of spaced rollers on a surface thereof to allow a user to place said assembled section on said rollers to move the same out of said frame.

4,623,084

HAND-HELD STAPLER

Paul Olesen, Bellmore, N.Y., assignor to Swingline Inc., Long Island City, N.Y.

Continuation of Ser. No. 700,243, Feb. 11, 1985, abandoned.
This application Jan. 13, 1986, Ser. No. 818,566
Int. Cl.[4] B25C *5/02, 5/04*
U.S. Cl. 227—153 **3 Claims**



1. A hand-held tool having an anvil, a housing including a first handle and a staple discharge channel and a second handle mounted on the first handle which tool provides space between the discharge channel and anvil to receive the workpiece, the improvement comprising

(a) an anvil mounted on the first handle for pivotal movement toward and away from the staple discharge channel;

(b) staple drive means movable in the discharge channel along a path substantially perpendicular to the anvil;

(c) anvil control arms each having end portions with an upper end portion pivotally mounted on the anvil and the other lower end portion connected to the second handle;

(d) handle mounting means on the first handle for mounting the second handle including (a) a guide rod fixed to the first handle and positioned in slots formed in the second handle and including (b) pivotal connector means for connecting the lower ends of the anvil control arms to the second handle such mounting means permitting the second handle to move with the anvil and to rotate relative to the first handle until the anvil engages the workpiece;

(e) elongated pusher means on the second handle engaged to the staple drive means which pusher means is shaped and sized so that as the second handle is moved toward the first handle the elongated pusher means moves to form an acute angle with the path of the staple driver means

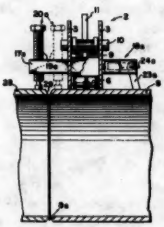
whereby the anvil is first brought against the workpiece and thereafter the second handle is rotated about the pivotal connector means of the lower ends of the anvil control arms until the elongated pusher means pushes the staple driver means a sufficient distance to drive the staple.

4,623,085

PIPE CLAMP

Timothy C. Dearman, P. O. Box 937, Pearland, Tex. 77588

Filed Jan. 9, 1985, Ser. No. 690,107
Int. Cl.[4] B23K *37/04*
U.S. Cl. 228—49.3 20 Claims



1. Apparatus for use in joining confronting ends of a pair of pipe sections having a joint therebetween, said apparatus comprising a frame member adapted to seat on one of said pipe sections adjacent said joint; a flexible clamp member, said frame member and said clamp member together forming a loop of such size as clampingly to encircle said one of said pipe sections; a plurality of holders carried by said clamp member at spaced intervals circumferentially of said loop; a jackbar carried by each of said holders for sliding movements axially of said loop, each of said jackbars being of such length as to extend from its holder beyond said joint, each of said jackbars having at one end thereof a stabilizing foot engageable with said one of said pipe sections and at its opposite end a jack screw movable radially of said loop into and out of forcible engagement with one of said pipe sections; at least one further jackbar slidably carried by said frame member and being of such length as to extend beyond said joint; and a jack screw carried by said further jackbar at one end thereof for movement radially of said loop, said further jackbar being slidable axially of said loop between positions in which the jack screw carried thereby is engageable with either one of said pipe sections.

4,623,086

PROCESS OF MONITORING FOR THE REFLECTIVITY CHANGE IN INDIUM PHASE TRANSITION SOLDERING

Peter L. Tihanyi, Yorktown, N.Y.; Jeffrey S. Mott, Westwood, N.J.; Hubert J. Vollmer, Mahopac, N.Y.; Maryanne Sovak, Shenorock, N.Y., and Sonnia C. Rojas, Ossining, N.Y., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Mar. 11, 1985, Ser. No. 710,505
Int. Cl.[4] H01L *21/58*
U.S. Cl. 228—123 10 Claims

1. A flux-free process for soldering an element to a heat sink comprising:

depositing flux-free oxidizable solder onto a surface of a heat sink and allowing limited oxidation of the solder surface; then

placing the element into proper position on the solder covered surface; then

placing the heat sink and element into a pressure controlled low vacuum chamber environment and therein raising the temperature of the solder to a level below its melting point for a first interval of time; and

during the first period, conducting a plurality of oxygen stripping gas introduction/purge cycles within the chamber; then

raising the temperature of the solder to an elevated level sufficient to cause a solid-to-liquid phase change to the solder layer, which is marked by optically detecting the change in phase from solid to liquid of the solder layer by monitoring for the reflectivity change characteristic of the phase transition, in the presence of the oxygen stripping gas within the chamber;

holding the solder in a liquid state for a second interval of time sufficient to allow the majority of the solder oxidation at the interface between the solder and the element to be removed by the action of the oxygen stripping gas; then

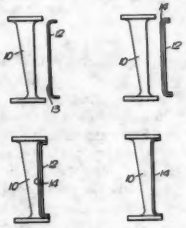
rapidly cooling the heat sink and element to a temperature at which the solder is solid.

4,623,087

APPLICATION OF COATINGS TO ARTICLES

Ralph I. Conolly, Bristol, England, assignor to Rolls-Royce Limited, England

Filed May 25, 1984, Ser. No. 614,244
Claims priority, application United Kingdom, May 26, 1983, 8314669; Jul. 15, 1983, 8319182
Int. Cl.[4] B23P *15/04*
U.S. Cl. 228—176 13 Claims



1. A method of applying a coating to a surface of a substantially rigid component, to form a composite article having a pre-determined shape, comprising the steps of:

(a) forming a carrier member a part of which has a surface shaped in a pre-determined configuration;

(b) applying a coating on said surface of the carrier member, the combination of the carrier member and coating being substantially rigid and the coating having a surface on the opposite side thereof from the carrier member which is shaped in reverse conformity to said surface of the rigid component;

(c) assembling together the component and the carrier member, with the conforming surfaces of the component and the coating adjacent each other; and

(d) hot isostatically pressing the assembled component and member with sufficient heat and pressure to form a diffusion bond between the adjacent conforming surfaces of the component and the coating, thereby to form a composite article.

4,623,088

REINFORCED PACKAGING TRAY

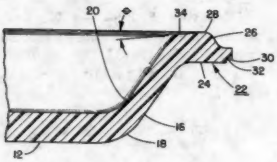
M. James Holden, Canandaigua, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 28, 1985, Ser. No. 750,316
Int. Cl.[4] B65D *1/34*
U.S. Cl. 229—2.5 R 20 Claims

1. In a reinforced molded packaging tray for the packaging of meat, fish, poultry, comestibles or the like, for use with a transparent overwrap film extending thereabout, said tray comprising upwardly and outwardly inclined side walls forming the sides of said tray; bottom wall means including a substantially flat bottom wall for supporting said meat, fish, poultry, comestibles or the like; and a curved wall portion extending between said bottom wall and the lower ends of said sidewalls so as to provide a smoothly contoured transitional surface, the improvement wherein:

said inclined sidewalls have a radially outwardly extending

lip portion extending about said side walls proximate the upper ends thereof, said lip portion having a radially outwardly and upwardly sloping planar surface extending into a concavely downwardly and outwardly curving upper surface projecting from the radially outer end of said upwardly sloping planar surface, a generally rectangular protuberance in cross-section smaller than said lip portion projecting radially outwardly of and about said lip portion so as to constitute a narrow trim lip, said trim lip having the upper surface extending from the lower outer end of said concavely curved surface and having sharp-cornered upper and lower edges, and said lip portion



having a generally horizontal planar bottom surface extending outwardly of said sidewalls below the bottom plane of said trim lip and having a sharp-cornered outer edge extending into an upward planar surface joining the bottom plane of said trim lip radially inwardly of the outer face of said trim lip whereby transparent overwrap film extending about said tray lip portion will primarily contact and engage only the radially outer rounded edge on said upwardly sloping surface of the lip portion, the sharp-cornered upper and lower edges on said trim lip and the outer edge on the bottom surface of said lip portion so as to maintain a minimum surface contact between said overwrap film and said tray.

4,623,089

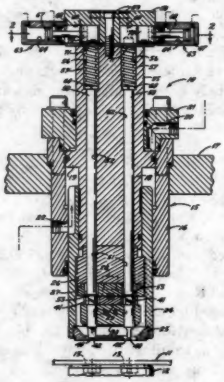
PUNCHING MACHINE WITH SELECTIVELY ACTUATABLE PUNCHES

William B. Scott, Rochelle, Ill., assignor to W. A. Whitney Corp., Rockford, Ill.

Filed May 13, 1985, Ser. No. 732,914

Int. Cl.[4] B26F *1/04*

U.S. Cl. 234—114 **4 Claims**



1. A machine for punching holes in a generally horizontal workpiece, said machine comprising a punch holder, a vertically elongated ram having lower end means detachably connected to said punch holder, said punch holder being movable into and out of said lower end means in a direction extending transversely of said ram, said ram being operable to advance the holder downwardly toward and retract the holder upwardly away from the workpiece, a plurality of punches mounted in the holder to slide downwardly and upwardly relative to the holder between punching and non-punching positions, said punches normally being disposed in said punching positions and projecting downwardly from said holder to engage the upper side of the workpiece when the holder is advanced downwardly toward the workpiece, means selectively operable to hold each punch downwardly in its punching position or to permit such punch to slide upwardly relative to the holder to its non-punching position when the punch initially engages the workpiece, said means comprising a plurality of vertically extending rods supported within said ram to slide downwardly and upwardly in the ram, there being a rod associated with each punch, each rod normally being positioned to limit upward movement of its associated punch relative to the holder and hold said punch in its punching position, each rod being slidable upwardly relative to the ram to permit the associated punch to slide upwardly relative to the holder to its non-punching position, downwardly opening holes in said lower end means of said ram and receiving the upper end portions of said punches when the punches are in said non-punching position, means for normally keeping the lower ends of said rods flush with the lower ends of said holes whereby said rods normally prevent the upper end portions of said punches from entering said holes and normally enable said punch holder and the punches therein to be moved into and out of said lower end means of said ram in a direction extending transversely of said ram without interference from either said rods or said punches, and individual actuators associated with the individual rods and each individually operable to permit or prevent upward movement of the associated rod.

4,623,090

AUTOMATIC INTERIOR AIR TEMPERATURE CONTROL APPARATUS WITH A DUAL PURPOSE FAN FOR USE WITH TEMPERATURE CONTROL SYSTEMS IN MOTOR VEHICLES

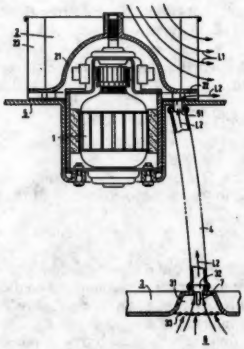
Siegfried Heger, Wuerzburg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich and Berlin, Fed. Rep. of Germany

Filed Mar. 18, 1985, Ser. No. 712,800

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1984, 3410019

Int. Cl.[4] F24F *7/06*

U.S. Cl. 236—49 **4 Claims**



1. For use in temperature control systems for vehicles such as heating or air-conditioning systems, an automatic interior compartment temperature control apparatus, wherein the interior compartment air is conveyed by a fan into the interior compartment of a motor vehicle and can be regulated in accor-

dance with a controllable temperature set value, using a temperature sensor which is impacted in a sensor compartment to detect the respective temperature actual value by an auxiliary air flow drawn off from the interior compartment of the motor vehicle by an auxiliary fan arrangement, said apparatus comprising:

an impeller of the fan having a closed hub dome and a plurality of main air flow blades connected to a top surface of the hub dome providing a main air flow when the impeller is rotated;

a plurality of auxiliary blades afixed to the impeller opposite to the main air flow blades, beneath the closed hub dome, outside the main air flow providing said auxiliary fan arrangement;

said auxiliary air flow drawn from the vehicle by the operation of said auxiliary blades;

a special air channel such as a flexible air hose draws said auxiliary air current over the temperature sensor;

an electric motor connected to the hub dome for rotating the impeller;

said fan is of a radial construction enclosed in a spiral housing with the auxiliary blades located on a radial outer portion thereof; and

said special air channel empties into an air inlet opening in a backwall of said spiral housing.

4,623,091

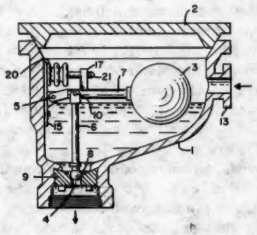
INTEGRATED FLOAT AND THERMOSTATIC STEAM TRAP

Marcel Stein, 560 Riverside Dr., New York, N.Y. 10027

Continuation of Ser. No. 592,100, Mar. 22, 1984, abandoned. This application Jun. 28, 1985, Ser. No. 751,452

Int. Cl.[4] F16T *1/02*

U.S. Cl. 236—52 **19 Claims**



1. A steam trap comprising a substantially closed compartment having an inlet for condensate and steam and an orifice for permitting discharge of condensate and/or gases, float means movable to alternately effect closing and opening of said orifice in dependence on the liquid level in the compartment and thermo-responsive means controlled by the temperature within the compartment for operating said float means to effect opening of said orifice and bringing said float means out of contact with any liquid in said compartment and holding said float means in elevated position for the duration of shutdowns when the temperature within the compartment is below a predetermined temperature.

4,623,092

HEATING AND COOLING SYSTEM FOR A MOTOR VEHICLE

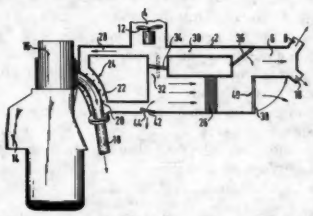
Norbert Arndt, Rüsselsheim, and Udo Schneider, Mörfelden-Walldorf, both of Fed. Rep. of Germany, assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 5, 1984, Ser. No. 658,426

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1983, 3338769

Int. Cl.[4] B60H *1/02*

U.S. Cl. 237—12.3 C **4 Claims**



1. Heating and cooling system for a motor vehicle equipped with a water-cooled internal combustion engine, including an exhaust pipe through which exhaust gases exit from the engine, an engine radiator through which water for cooling the engine is circulating, said engine radiator being mounted inside a housing provided with an air intake for admitting outside air and with at least one heater duct extending to the vehicle interior, and wherein a heater is mounted upstream of the engine radiator, the improvement comprising:

the heater being in the form of an exhaust gas heat exchanger served by the exhaust pipe, and control means provided inside the housing and downstream of the engine radiator for selectively redirecting the air stream flowing through the engine radiator to outside the vehicle through an opening or to the heater duct, and

a first bypass connection arranged behind the air intake extending to the heater duct for causing the air to bypass the exhaust gas heat exchanger and the engine radiator.

4,623,093

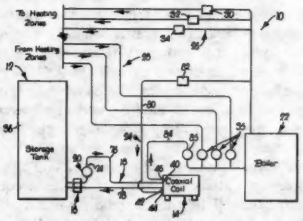
COMBINATION DISCHARGE AND SUPPLY FITTING FOR HOT WATER TANK

William C. Arndt, Michigan City, Ind., assignor to The Marley-Wylain Company, Michigan City, Ind.

Filed Apr. 6, 1984, Ser. No. 597,474

Int. Cl.[4] F24D *3/08*

U.S. Cl. 237—19 **1 Claim**



1. A water heating system comprising, in combination:

space heating apparatus including a water heating boiler having lines of delivery of hot water from the boiler to zones to be heated and lines provided with pump means for returning cold water from said zones to the boiler;

a heat exchanger having a pair of separate tubular compo-

nents in thermal interchange relationship, a first line for flow of hot water from the boiler through one of said tubular components thereof, and a second line provided with pump means for returning cold water from said one tubular component to the boiler;

a hot water storage tank having a first conduit for flow of hot water thereto from the other tubular component of said heat exchanger and a second conduit for flow of cold water from said storage tank through said other tubular component;

a hollow circulator fitting interposed between said storage tank and the heat exchanger and having a first pipe connecting said circulator fitting and the tank for flow of cold water from the tank into the fitting,

said fitting having a pump provided with an impeller therewithin for conveying cold water from said fitting to said second conduit; and

a second pipe for conveyance of hot water from the first conduit to the tank,

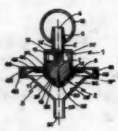
said second pipe extending through the first pipe into the tank beyond the first pipe.

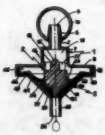
4,623,094

DISTRIBUTOR OR DRIPPER FOR THE MICRO-IRRIGATION OF SOILS

Pierre A. Smeyers, Brussels, Belgium, assignor to Raymond J. Nakachian, Saudi Arabia

Filed Feb. 16, 1984, Ser. No. 580,998
Claims priority, application Belgium, Feb. 22, 1983, 210175
Int. Cl.[4] B05B *1/30, 15/02*
U.S. Cl. 239—109 **7 Claims**





1. A distributor or dripper for the micro-irrigation of soils, comprising:

a housing for an inner chamber, provided with an inlet for connection to a conduit of irrigation liquid and also provided with an outlet, said chamber having a cylindrical wall near the inlet and a frusto-conical wall near the outlet, the large base of the frusto-conical wall being adjacent to the cylindrical wall and having a diameter which is smaller than that of said cylindrical wall;

a closing member which is movable in said chamber between a first seat adjacent to said inlet and a second seat adjacent to said outlet, said closing member being provided with guiding means;

an elastic circular membrane carried by said closing member and having a diameter which is smaller than that of the cylindrical wall of the chamber, so that the irrigation liquid can flow toward the outlet around the periphery of said membrane when the latter is in the part of the chamber surrounded by said cylindrical wall, the membrane being provided with a circular array of notches separated from each other by teeth, so that said notches act as filters which allow a flow of irrigation liquid toward the outlet, but retain particles contained in said liquid, when said membrane is in the part of the chamber surrounded by said frusto-conical wall and is in contact with said frusto-conical wall;

a dripping groove provided downstream of said membrane and forming a channel having one end collecting the irrigation liquid filtered through the filtering notches and another end discharging the liquid into said outlet, said groove having such a profile that the filtered liquid is submitted therein to several direction changes, and

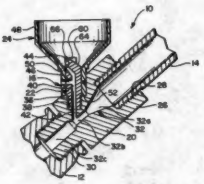
elastic means for returning the closing member from the seat adjacent to the outlet to the seat adjacent to the inlet, when the pressure of the irrigation liquid is lower than a value determined by the elasticity of said elastic means, wherein said elastic means are spaced radial elastic arms acting as snapping springs, said radial elastic arms having one end attached to the closing member upstream of the notched membrane and another free end bearing against a circular shoulder provided in the housing of the distributor or dripper between the cylindrical wall and the frusto-conical wall of the chamber.

4,623,095

LIQUID ADDING APPARATUS AND METHOD FOR A SHOWER FIXTURE

Frank E. Pronk, Box 30 Nautilus Road, RR 2, Nanoose Bay, British Columbia, Canada (V0R 2R0)

Filed Nov. 19, 1984, Ser. No. 673,515
Int. Cl.[4] B05B *7/30*
U.S. Cl. 239—311 **28 Claims**



1. An apparatus to selectively introduce an additive liquid into a stream of water flowing through a shower head, said apparatus comprising:

a. a main housing member defining a first main through passageway for flow of shower water therethrough, said passageway having a reduced flow area passageway portion to create a low static pressure flow area;

b. a second dispensing member connected to said housing member and defining a second passageway having an inlet end and an outlet end leading into the low pressure flow area of the first passageway;

c. an additive liquid container defining a containing chamber and adapted to be mounted to said second member so that said container can be moved relative to the second member and so that said inlet of the second passageway communicates with the containing chamber with said container being positioned so that there is a gravitational component of flow from said containing chamber to said second passageway; and

d. the second member and the container collectively defining selectively operable aspirating air passageway means connecting to said second passageway, said air passageway means being arranged so that relative movement between the container and the second member to selected positions relusts in greater or less air flow through the air passageway means to the second passageway while flow of the additive liquid is maintained through said second passageway, to vary flow of additive liquid through the second passageway to the first main passageway.

4,623,096

PROCESS AND EQUIPMENT FOR CUTTING MATERIAL

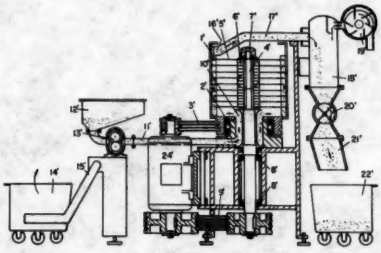
Reiner Grebe, Biedenkopf; Max Norbisrath, and Karl-Heinz Schmidt, both of Briedenbach, all of Fed. Rep. of Germany, assignors to Kramer & Grebe GmbH & Co. KG, Biedenkopf-Wallau, Fed. Rep. of Germany

Continuation of Ser. No. 461,254, Jan. 26, 1983, abandoned, and a continuation-in-part of Ser. No. 378,520, May 17, 1982, Pat. No. 4,520,963. This application Nov. 20, 1984, Ser. No. 673,225

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1981, 3122266; Jan. 27, 1982, 3202618

Int. Cl.[4] B02C *19/00, 18/00*

U.S. Cl. 241—30 14 Claims



1. Process for cutting material on the inner wall of a drum, including the steps of guiding round knives each having a center of rotation on an arc of a circle around the drum axis along the drum inner wall while maintaining and round knives, nonrotating about their respective centers of rotation,

continuously feeding material into said drum while rotating said drum around said axis with sufficient speed so that the fed material is guided to and positioned against the inside of the drum all by the centrifugal force and cut by said round knives while positioned against the inside of the drum wall,

and continuously withdrawing the cut material from the drum thus rotating.

4,623,097

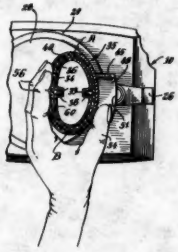
CONVENIENT FEEDTUBE PROTECTOR AND SINGLE-MOTION COVER LIFTING STRUCTURE FOR A FOOD PROCESSOR

Carl G. Sontheimer, 14 Gray Oaks La., Greenwich, Conn. 06830

Filed Mar. 2, 1981, Ser. No. 239,317

Int. Cl.[4] B02C *18/12*

U.S. Cl. 241—37.5 8 Claims



1. A convenient feedtube protector and cover lifting structure for a food processor of the type including a base containing an electric motor drive and having control meand for rendering said motor drive inoperative unless actuation of said control means occurs, a bowl mountable on said base for surrounding a rotary tool adapted to be driven by said electric motor drive and a removable cover for said bowl with a feedtube mounted thereon forming a passageway for feeding tube items through said cover into said bowl with a feedtube protector including an outer sleeve nestable in a predetermined position around the exterior of said feedtube carrying a food pusher captured in telescoping relationship with respect to said outer sleeve so that the pusher can be plunged longitudinally into said passageway for pushing food items toward the rotary tool in said bowl, said control means being acutated for rendering said motor drive operative when and only when said cover is properly positioned on said bowl and said feedtube protector is nested in said predetermined position around said feedtube, said convenient feedtube protector and cover lifting structure comprising: said outer sleeve of the feedtube protector having a lateral access opening therein for exposing a portion of the feedtube to the grasp of the user, such that said feedtube protector as well as the cover may be removed from the bowl using one hand to simultaneously grasp both the outer sleeve of the feedtube protector and the feedtube itself through said lateral access opening, thereby enabling simultaneous removal of both the feedtube protector and the cover from the bowl in a single motion using one hand.

4,623,098

GRANULATING AND COATING MACHINE

Shimesu Motoyama, Asaka; Kaoru Kurita, Ranzan; Shizuka Sakashita, Chiba; Narimichi Takei, Sugito, and Shigeru Ohno, Kamakura, all of Japan, assignors to Freund Industrial Co., Ltd., Tokyo, Japan

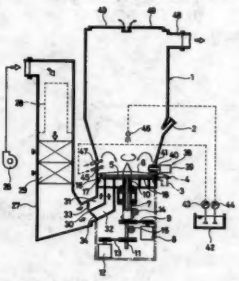
Filed Oct. 17, 1983, Ser. No. 542,471

Claims priority, application Japan, Oct. 18, 1982, 57-182496; Dec. 31, 1982, 57-234392

The portion of the term of this patent subsequent to Dec. 3, 2002, has been disclaimed.

Int. Cl.[4] B02C *23/26*

U.S. Cl. 241—46.04 14 Claims



1. A granulating and coating machine for use in the granulation, coating, mixing, and/or drying of powdery or granular materials, comprising a casing for containing powdery or granular materials to be treated, a rotary disk rotatable substantially horizontally in said casing, an annular slit for feeding slit gas into said casing formed between an inner surface of said casing and the outer periphery of said rotary disk, and at least one disintegrator provided above said rotary disk for disintegrating large particles.

4,623,099

OPENING DEVICE FOR OPENING PRESSED FIBER BALES

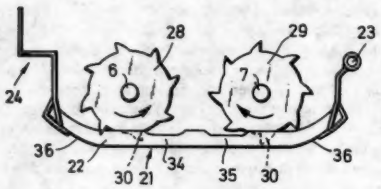
Gerd Vosbein, Senden, and Hubert Hergeth, Dülmen, both of Fed. Rep. of Germany, assignors to 501 Hergeth Hollingsworth GmbH, Dülmen, Fed. Rep. of Germany

Filed Sep. 18, 1984, Ser. No. 652,154

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1983, 3334069

Int. Cl.[4] B02C *19/12*

U.S. Cl. 241—101 A **10 Claims**



1. In a fiber bale opening device for opening pressed fiber bales such as cotton and staple fiber bales having an opening device housing in which opening rollers having opening disks with teeth or needles are provided to cooperate with a grate whose grate rods are situated between the opening disks, said opening device housing and the fiber bales moving relatively by each other in contact with the teeth or needles of the opening disks engaging the fiber bales; wherein the improvement comprises:

said grate rods including a laterally inclined offset portion extending in transverse direction to the direction of movement of the opening device housing; and at least one opening disk being mounted ahead of such offset portion and at least one other opening disk being mounted behind each said offset portion in a manner that ridges of fiber created by said opening device are evened out by said opening disks upon movement of said opening device housing in opposite directions relative to said bales.

4,623,100

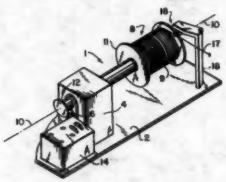
SPOOLING MACHINE, ESPECIALLY FOR FLAT WIRE

Bruce R. Tremblay, Auburn, Me., assignor to North American Philips Corporation, New York, N.Y.

Filed Mar. 11, 1985, Ser. No. 709,966

Int. Cl.[4] B65H *54/28*

U.S. Cl. 242—25 R **10 Claims**



1. An apparatus for winding wire on a spool having a prescribed width comprising guide means for guiding a length of wire onto said spool to be wound around said spool; means for rotating said spool about an axis to cause said wire to be wound around said spool; traverse means for moving said guide means and said spool relative to each other and parallel to said axis to wind said wire helically about said spool with a prescribed lay width; first digital means for providing a rotation signal corresponding to increments of angular rotation of said spool; second digital means for providing a translation signal corresponding to increments of axial displacement between said guide element and said spool; third digital means for providing a lay width signal; fourth digital means for providing a spool width signal; and processing means for comparing said translation signal with a value computed from said rotation signal, said lay width signal and said spool width signal and for providing a control signal to said traverse means based on said comparison.

4,623,101

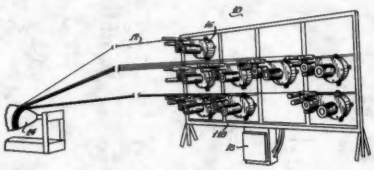
FILAMENT TENSIONER

Harold L. Cacak, Lincoln, Nebr., assignor to Brunswick Corporation, Skokie, Ill.

Filed Jul. 25, 1984, Ser. No. 634,276

Int. Cl.[4] B65H *59/38, 63/024*

U.S. Cl. 242—45 **12 Claims**



1. A filament tensioner for controlling the tension of filament transferred between an article and a spool, comprising:

a low inertia permanent magnet DC motor having at least two terminals coupled to a source of controlled voltage energizable to provide variable torque to the spool in either of first and second directions;

means for sensing the tension in the filament as the filament is delivered including rotatable means coupled to the filament and rotatable to a position determined by the filament tension and means for developing a position signal representing the position of the rotatable means;

means coupled to the tension sensing means for controlling the motor torque magnitude and direction in dependence upon the position signal to in turn maintain the filament tension at a desired value; and

means for detecting breakage of the filament including means for sensing whether the voltage at one of the terminals has risen above a certain level for more than a particular length of time and means for responsive to the detecting means for de-energizing the motor when filament breakage occurs.

4,623,102

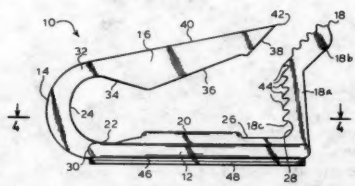
ARTICLE CLAMP

William C. Hough, Jr., St. James, N.Y., assignor to Apple Adhesives, Inc., Hollis, N.Y.

Filed Dec. 14, 1983, Ser. No. 561,194

Int. Cl.[4] F16L *3/22*

U.S. Cl. 248—68.1 **7 Claims**



1. A releasable retainer adapted for retaining a first wire having a first diameter or several second wires having a second diameter smaller than said first diameter, said retainer compris-

ing: an integral plastic body defining an elongate base extending between first and second ends of said base along a longitudinal axis and having a generally flat interior base surface, a hinge upstanding from said base first end and cantilever-supported by said base, said hinge having an arcuate interior surface engageable with said first wire along an axis perpendicular to the longitudinal axis, an rigid beam catilever-supported by said hinge at one end with a free end opposite thereto and including a first flat interior surface portion continuous with said hinge interior surface for engagement with said first wire so as to clamp said first article between said first flat interior surface and said arcuate surface of the hinge upon movement of the beam towards the body, said beam further including a second interior surface which cooperates with said base surface to engage said several second wires along said axis perpendicular to the longitudinal axis when said second interior and said base surfaces are parallel, and means releasably retaining said free end of the beam at a predetermined plurality of poisitons so as to allow for adjustably retaining the free end therein.

4,623,103

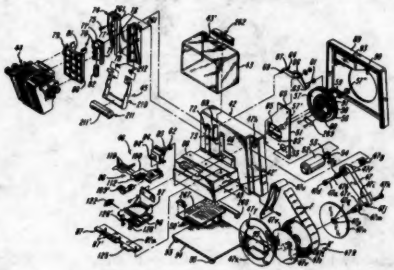
PRINTING APPARATUS

Orville C. Huggins, Dayton, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Division of Ser. No. 349,498, Feb. 17, 1982. This application Feb. 1, 1984, Ser. No. 575,968

Int. Cl.⁴ B65H *75/18*

U.S. Cl. 242—71.8 **8 Claims**



1. A reel having a hub for receiving a web in a roll and a side plate having an outer peripheral edge, the side plate extending radially outwardly beyond the hub and adapted to retain a side of the roll, a disc having an opening, the side plate being received in the opening of the annular disc, and means for removably connecting the disc to the outer peripheral edge of the side plate so that when the disc is on the side plate the hub can retain a roll having a greater outside diameter than without the disc.

4,623,104

RETRACTOR

Shinji Mori, Niwa, Japan, assignor to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, Aichi, Japan

Filed Aug. 2, 1985, Ser. No. 761,704

Claims priority, application Japan, Aug. 6, 1984, 59-120833[U]

Int. Cl.⁴ B60R *22/36*

U.S. Cl. 242—107.4 R **27 Claims**

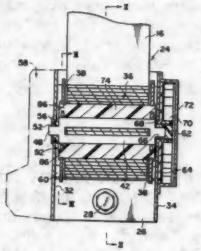
1. A retractor for use in a seatbelt system designed to protect an occupant of a vehicle when an emergency situtation occurs, which comprises:

(a) a frame secured to a vehicle body;

(b) a metallic core member rotatably supported by said frame and having one end of a webbing directly or indirectly secured thereto;

(c) a webbing takeup winding drum provided on the outer periphery of said core member, said winding drum being made of a synthetic resin which endures a compressive force applied thereto by said webbing;

(d) a ratchet wheel disposed at one axial end of said winding drum and on the outer periphery of said core member, said ratchet wheel constituting a part of lock means which is actuated when a vehicular emergency situation occurs; and



(e) a plate-like retaining portion of a synthetic resin disposed outside said ratchet wheel, said retaining portion being received through said ratchet wheel and intergrally connected to said winding drum through connecting portions, said connecting portions being disposed at substantially equal distances about the axis of said winding drum, whereby the connection between said ratchet wheel and said winding drum is ensured.

4,623,105

VIDEO CASSETTE

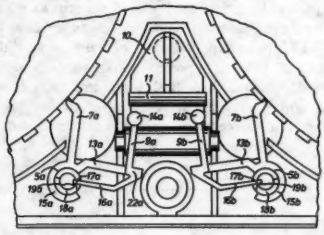
Albert Pertzsch, Munich; Hubert Brunner, Weil, and Ludwig Zeroni, Ottobrunn, all of Fed. Rep. of Germany, assignors to Agfa Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 27, 1985, Ser. No. 802,234

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1984, 3444861

Int. Cl.⁴ G03B *1/04*; G11B *15/32*

U.S. Cl. 242—198 **7 Claims**



1. A video cassette with a housing vertically rotatable release lever and two flanged reels which are arranged in plane-parallel fashion for winding and unwinding a magnetic tape having a support pin adjacent to but spaced from each reel, and with a locking mechanism consisting of a pivotal two-armed pawl for each reel positionable on one of the pins, teeth formed in the flange around the periphery of each reel, said pawls each comprised of a first reel engaging lever arm engageable in the teeth positioned on the reel flange in the inoperative position of the cassette, and a second lever arm having an end resting on the disengaging component of the vertically rotatable release lever in said cassette, said two lever arms being connected by a transverse web, wherein

said transverse web extends perpendicularly to and between the two lever arms

the second lever arm of each pawl having one end resting on the disengaging component of the release is formed in an L-shape at the other end

a pre-tensioning arm is formed on the short side of the L-shaped other end of the second lever arm which pre-tensioning arm has a free end,

said free end rests on a deflection point rigidly integral with the cassette housing,

the distance between the point of deflection and the rotational axis of the pawl is smaller than the radius of the pin.

4,623,106

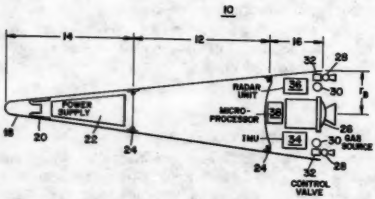
REENTRY VEHICLE HAVING ACTIVE CONTROL AND PASSIVE DESIGN MODIFICATIONS

Donald A. Price, Jr., Palo Alto; William E. Brandt, Sebastopol, and Jan Verheul, Sunnyvale, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 25, 1984, Ser. No. 664,634

Int. Cl.[4] F42B *15/02*

U.S. Cl. 244—3.1 **6 Claims**



1. An improved reentry body (RB) for transportation aboard a ballistic missile, said improvement entailing replacement of specific sections of a conventional ballistic reentry body (BRB) having a forward, mid and aft section and comprising:

(a) a new forward section having increased length and decreased nosetip radius retrofitted to the mid section, said new forward section having said nosetip and a smooth annular collar just aft of said nosetip constructed of materials such that shape stability of said improved RB is maintained under ablative erosion of reentry; and

(b) a new aft section retrofitted to said mid section, said new aft section having an active control means to actively measure and correct for velocity dispersions occurring from RB deployment.

4,623,107

REGULATING SYSTEM FOR GUIDED MISSILES TRAVELING AT SUPERSONIC SPEED

Helmut Misöph, Lauf/Pegnitz, Fed. Rep. of Germany, assignor to Diehl GmbH & Co., Nuremberg, Fed. Rep. of Germany

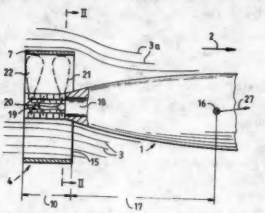
Filed Nov. 5, 1984, Ser. No. 668,033

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1983, 3340037

Int. Cl.[4] F42B *15/02, 25/24*

U.S. Cl. 244—3.22 **10 Claims**

1. In a regulating system for guided ammunition flying at supersonic speed, such as missiles, rockets or projectiles, an arrangement for the guidance through a partially variable flow pressure; the improvement comprising: arranging at least one guidance systems on the ammunition in the form of annular or quasi-annular guidance mechanisms which are divided into sectors, and pyrotechnic gas-generating media becoming effective within the sectors to cause the sectors to selectively and controllably block the airflow therethrough.



4,623,108

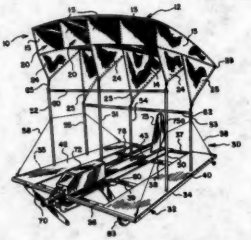
AIRPLANE

Stanley D. Musick, 2227 Sherer Ave., Dayton, Ohio 45414

Filed Feb. 17, 1984, Ser. No. 581,489

Int. Cl.[4] B64C *1/26*

U.S. Cl. 244—13 **5 Claims**



1. A flying canopy airplane, comprising an airfoil shaped cloth canopy having a plurality of depending attachments in the form of triangularly shaped gussets,

means connecting said gussets to the bottom surface of said canopy with the apices thereof extending downwardly,

an underlying generally rectangular planar platform,

support means on said platform including a plurality of generally upwardly extendly pylons rigidly attached to said platform and having upper terminal ends,

means directly said pylon upper terminal ends to said gussets at said apices thereof for supporting said canopy in generally fixed relation superimposed over said platform,

a controllable propulsion engine mounted on said platform, at a forward end thereof, and a rudder mounted on said platform at the rear end thereof, said engine and said rudder providing the exclusive control of said flying canopy airplane whereby the flight of such airplane may be controlled by a two axis radio control unit.

4,623,109

LOW ALTITUDE PARACHUTE SYSTEM

James E. Sadeck, East Freetown, Mass., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 28, 1985, Ser. No. 749,700

Int. Cl.[4] B64D *17/00, 17/08*

U.S. Cl. 244—152 **12 Claims**

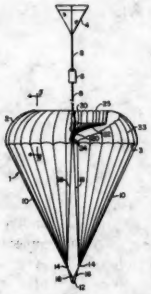
1. An annular ring parachute comprising:

(a) an annular ring parachute canopy having a main vent, said canopy formed of a series of gores which have been

sewn together to form the canopy and having a main vent periphery and a skirt;

(b) suspension lines connected at one end to said skirt and at the other end to risers attached to a load-bearing harness;

(c) a restraining means connected to said canopy for slowing the opening of said main vent while the canopy of said parachute inflates wherein said restraining means comprises a plurality of restrictor lines with one end of each of said restrictor lines attached at equally spaced intervals



around said main vent periphery of the canopy, said restrictor lines passing through a restrictor ring with the other end of each restrictor line attached to a single connector line which in turn is connected to axial center lines, wherein said axial center lines are connected to risers by riser links, said restrictor ring connected to said pilot chute by a restrictor bridle and

(d) a pilot chute connected to said restraining means and adapted when inflated to apply a force to said restraining means to slow the opening of said main vent.

4,623,110

MOUNTING DEVICE OF EQUIPMENTS FOR USE ON VEHICLES

Mitsuru Kanari, Iwaki, Japan, assignor to Alpine Electronics Inc., Japan

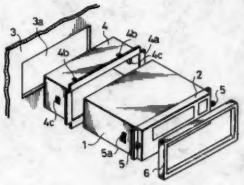
Filed Dec. 26, 1984, Ser. No. 686,228

Claims priority, application Japan, Dec. 26, 1983, 58-200687[U]; Jun. 30, 1984, 59-99539[U]

Int. Cl.[4] G12B *9/00*

U.S. Cl. 248—27.1 **8 Claims**

PRIOR ART



1. A mounting device of equipments for use on vehicles of the type in that

a screw shaft is provided inside a side plate of an equipment body extending in the body-insertion direction relative to an installation base member,

a fastening member is pivoted on a moving member screw-coupled with said screw shaft which fastening member is urged by a spring in the direction of projecting beyond said side plate,

a pinching portion is provided in said equipment body for pinching said installation base member together with said fastening member being projecting, and

a pushing portion is also provided in said equipment body which abuts upon said fastening member to pivot said fastening member inside said side plate when said moving member is moved by means of said screw shaft in the direction of departing from said pinching portion.

4,623,111

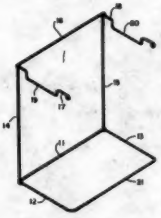
WIRE HOLDER FOR HANDLED PLASTIC BAGS

Randolph D. Prader, Fairport, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 24, 1984, Ser. No. 685,588

Int. Cl.[4] A63B *55/04*

U.S. Cl. 248—97 **12 Claims**



1. A holder for open mouth plastic bags having integral loop handles disposed on opposite sides of the mouth thereof comprising:

a base longitudinal wire piece;

two base wire pieces extending at one end thereof perpendicularly from the ends of said base longitudinal wire piece;

two vertical wire pieces, each extending at one end thereof from the junctions of said base longitudinal wire piece and said two base wire pieces;

a top longitudinal wire piece extending between the other ends of said two vertical wire pieces;

two top wire pieces extending from the junction of said two vertical wire pieces and said top longitudinal wire piece and extending substantially parallel to said two base wire pieces; and

tabs integrally formed from said two top wire pieces intermediate the ends thereof, said tabs each comprising three integral sections of one of said top wire pieces, two of said sections extending downwardly from one of said top wire pieces and integrally connected to each other at the lower ends of said two sections by an integral third section, said tabs extending downwardly from said two top wire pieces for suspending one of the bags held in an open position by the handles looped over and in engagement with said downwardly extending sections of said tabs, said tabs extending downwardly through the openings in the handles to prevent the handles from being easily dislodged from said tabs.

4,623,112

SUPPORT FOR A BEVERAGE CONTAINER

Lorimer Olson, Box 40, Strongfield, Saskatchewan, Canada S0H 3Z0

Filed Jul. 1, 1985, Ser. No. 749,995

Claims priority, application Canada, Jul. 5, 1984, 458153

Int. Cl.[4] A47G *23/02*

U.S. Cl. 248—153 **1 Claim**

1. A support for a single beverage container, comprising a base member sized to receive only the beverage container and having a substantially planar underside, activatible adhesive means on the underside of the base by which the base can be attached to a surface, and four support members upstanding from an upper side of the base for engaging and supporting sides of the container, the members being free to flex outwardly so as to accommodate containers of different outside

dimensions, said members being formed by a single wire which is bent to form each of the members in turn with an interconnection between each member and the next adjacent member only at the base, each member comprising a loop of said wire defining two lower ends projecting into a peripheral edge surface of said base in a substantially horizontal direction, two

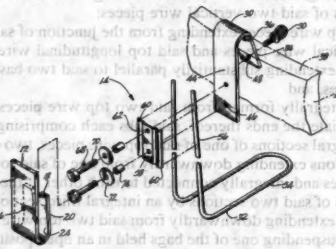
generally upstanding legs and a transverse interconnecting portion at an upper end, said legs being shaped such that each turns from said horizontal lower end in an upward and inward direction to a position of closest approach of said members and then turned in an outward and upward direction to said interconnecting portion.

4,623,113

PLANT CONTAINER WALL SUPPORT

Kendall D. Studebaker, 8091 Woodglen Cir., La Palma, Calif. 90623

Filed Mar. 7, 1985, Ser. No. 708,977
Int. Cl.[4] A47K *1/08*
U.S. Cl. 248—311.2 **7 Claims**



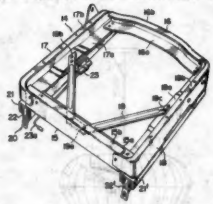
1. A detachable, adjustable plant container support device, for supporting a plant and its container in a spaced relationship to a vertical surface, said device comprising a wall bracket and container holder, said wall bracket comprising a U-shaped longitudinal member having first and second upwardly extending parallel arms in a spaced apart relationship, the first arm adapted to be secured to a vertical surface and the second arm having two upwardly extending parallel tines separated by an open slot adapted to detachably receive a hanger means, said tines having an inner side facing said first arm and an opposite outer side, said container support comprising a clamping member, a base member and retaining means for securing the base member to the clamping member, said clamping member adapted to hook over the top edge of an open top container having a base to secure said container from pitching and rolling with respect to said base member, said base member adapted to receive and support the base of the container, said retaining means for retaining said clamping member and base member attached to said hanger means for detachably securing said container support to said wall bracket.

4,623,114

SEAT FRAME FOR VEHICLE SEAT

Takaichi Nishino, Tokyo, Japan, assignor to Tachikawa Spring Co. Ltd., Tokyo, Japan

Filed Aug. 31, 1982, Ser. No. 413,462
Int. Cl.[4] F16M *13/00*
U.S. Cl. 248—415 **6 Claims**



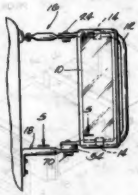
1. A seat frame for a cushioned vehicle seat, said frame being adapted to slidably move forward and backward, said seat frame comprising a front, two side connecting members, and a reinforcing arm, said reinforcing arm being generally V-shaped and connected at its center to the front member of said seat frame and having two extensions which are attached to said two side connecting members of said seat frame, respectively, said seat frame having an upper edge and said V-shaped reinforcing arm being substantially located below said upper frame edge.

4,623,115

PRESET MIRROR MOUNT

Robert R. Brester, New Berlin, Wis., assignor to Velvac, Inc., New Berlin, Wis.

Filed Nov. 12, 1985, Ser. No. 796,769
Int. Cl.[4] A47G *1/24*
U.S. Cl. 248—479 **6 Claims**



1. A rear view mirror support having adjustable detented positions, comprising,

a fixed bracket,

a retainer non-rotatably connected to said bracket,

a movable bracket,

a cover non-rotatably connected to said movable bracket and having a depending skirt,

spring means under said cover and having a radially yieldable connection with the inside of said skirt,

means fixing said spring means relative to said retainer,

and means for disconnecting said spring means from said retainer to permit adjustment of said spring means relative to said retainer.

4,623,116

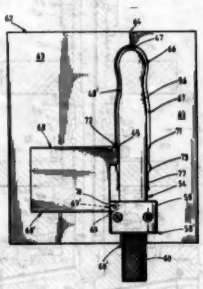
APPARATUS FOR PROTECTING A PRE-FORMED PROJECTING APPENDAGE DURING PLASTIC MOLDING

Frank J. Gerow, Houston, Tex., assignor to Synergist Limited, Houston, Tex.

Filed Sep. 26, 1984, Ser. No. 654,782

Int. Cl.[4] B29C *39/02, 45/03*

U.S. Cl. 249—55 **19 Claims**



1. Apparatus for molding a product from a thermo plastic or thermosetting material in which the product has integrally embedded therein a portion of a pre-formed non-rigid elongated member, the remaining length and free end of the preformed non-rigid member extending from the molded product to form an elongated appendage projecting therefrom, comprising:

a mold for forming the product from the selected material, means for anchoring one end of the preformed member at a selected position on said mold,

a portion of the pre-formed member succeeding said anchored one end being positioned along at least a portion of the mold surface,

storage means mounted on said mold and cooperating therewith for storing and protecting the remaining length and free end of the pre-formed non-rigid member exending past a predetermined exit location in the surface of the molded product during the molding process, and

means for applying the selected molding material to said mold for forming the product and integrally imbedding said portion of the pre-formed non-rigid member within the molded product,

said protected remaining length and free end of the preformed member when removed from said storage means forming an elongated appendage projecting from the molded product.

4,623,117

TOOL FOR MOULDING THE TOP PART OF A PLASTICS CONTAINER

Heinrich Ueberegger, Uster, Switzerland, assignor to KMK Karl Mägerle Lizenz AG, Zug, Switzerland

Filed Dec. 1, 1983, Ser. No. 556,781

Claims priority, application Switzerland, Dec. 2, 1982, 7003/82

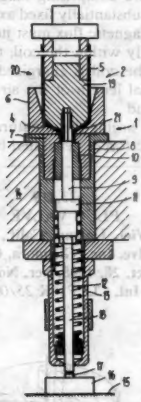
Int. Cl.[4] B29C *33/00, 45/26*

U.S. Cl. 249—122 **16 Claims**

1. A core for moulding the top part of a plastic container having a continuous axial neck channel surrounded by a tubular sleeve, integral with said container, said sleeve having a lateral access passage therethrough, said core comprising:

an outer part having a peripherally non-divided casing and having a bore extending into one end; and

an inner part axially movable into said outer part, said inner part comprising a pin having a first portion and a second portion, said first portion having longitudinal grooves and penetrating with a sliding fit into said bore, said second portion having a smaller diameter than said first portion and said bore,



a space between said second portion and said bore providing a mould cavity for forming said sleeve and communicating by way of said grooves with said mould cavity to permit flow of plastic material into said space.

4,623,118

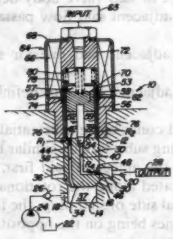
PROPORTIONAL CONTROL VALVE

Viraraghavan S. Kumar, Waterloo, Iowa, assignor to Deere & Company, Moline, Ill.

Continuation of Ser. No. 474,859, Aug. 5, 1982, abandoned. This application Nov. 15, 1985, Ser. No. 798,357

Int. Cl.[4] F16K *31/42*

U.S. Cl. 251—30.01 **1 Claim**



1. A proportional control valve comprising:

a housing having a valve bore therein, and having a fluid inlet and a fluid outlet communicating with the valve bore;

a first valve member movable in the valve bore in response to fluid pressure to control fluid flow between the inlet and the outlet;

a second valve member movable in the valve bore and cooperating with the first valve member to control fluid pressure acting on the first valve member;

a hollow case;

a magnetic conductive armature fixed with respect to the second valve member and movable within the case;

a coil surrounding the case for generating magnetic flux and thereby moving the armature;

a sleeve assembly movable in the case with the armature and coaxially receiving the armature, the sleeve having a non-magnetic section surrounding a portion of the arma-

ture and having a magnetic conductive end section including a radially inwardly extending lip spaced axially apart from the armature by a substantially fixed distance, the lip and the armature comprising magnetic circuit elements separated by a substantially fixed axially extending air gap across which magnetic flux must jump, this air gap being positioned axially within the coil, the axial length of the air gap when the coil is energized being essentially the same as the axial length of the air gap when the coil is de-energized; and

resilient means for urging the armature and sleeve in opposition to magnetic forces generated by the coil.

4,623,119

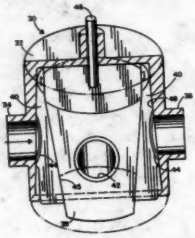
PLUG VALVE

Hans M. van der Wiel, Upland, Calif., assignor to Johnston Pump/General Valve, Inc., Glendora, Calif.

Filed Oct. 28, 1985, Ser. No. 792,043

Int. Cl.[4] F16K *25/00*

U.S. Cl. 251—163 **4 Claims**



1. An improved plug valve of the type having a rotatable plug connected to retractable slips within the valve body and a flow passage through the plug for alignment with the inlet and outlet of the valve when the plug is in the opened configuration, the improvement comprising:

the interior surface of said valve body defining a first cone;

the plug surfaces adjacent said flow passage defining a second cone;

the slip surfaces adjacent said interior surface defining a third cone;

the plug surfaces adjacent said slips defining a pair of intersecting planes;

said first and third cones being substantially congruent, said second cone being substantially similar to but smaller than said first cone, the apices of said first, second and third cones being located along the rotational axis of said plug on the same axial side of said plug, the intersection of said intersecting planes being on the opposite axial side of said plug from said apices.

4,623,120

SAFE HIGH PRESSURE INSTRUMENT VALVE

Francis Leighton, Woodland Hills, and Fred W. Trebes, Northridge, both of Calif., assignors to Air Dry Corporation of America, Northridge, Calif.

Continuation-in-part of Ser. No. 610,424, May 15, 1984, Pat. No. 4,519,580, which is a continuation-in-part of Ser. No. 494,657, May 16, 1983, abandoned. This application Mar. 22, 1985, Ser. No. 715,075

The portion of the term of this patent subsequent to May 28, 2002, has been disclaimed.

Int. Cl.[4] F16K *31/44*

U.S. Cl. 251—223 **13 Claims**

1. A valve comprising:

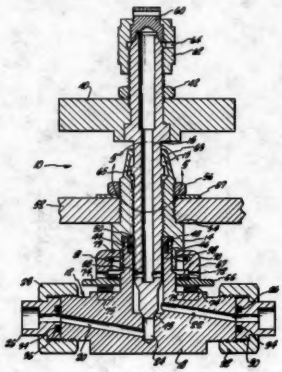
(a) a body having an inlet, an outlet, and a passage between the inlet and the outlet;

(b) a bonnet threaded onto the body;

(c) a stem rotatable within the bonnet such that the stem is capable of blocking the passage; and

(d) an integral, releasable locking means between the body and the bonnet for preventing the bonnet from being inadvertently threaded off the body, wherein the locking means comprises:

(i) a locking element nonrotatably attached to the body



such that when the bonnet is detached from the body the locking element remains nonrotatably attached to the body;

(ii) a lock nonrotatably attached to the bonnet, such that when the bonnet is detached from the body the lock remains nonrotatably attached to the bonnet; and

(iii) means for releasably engaging the lock and the locking element.

4,623,121

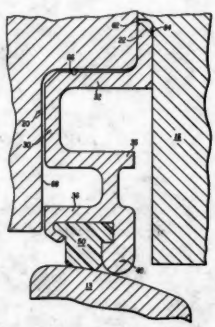
BUTTERFLY VALVE SEAT

James F. Donnelly, Auburn, Mass., assignor to Jamesbury Corporation, Mass.

Continuation of Ser. No. 475,647, Mar. 15, 1983, abandoned. This application Aug. 7, 1985, Ser. No. 763,323

Int. Cl.[4] F16K *11/052*

U.S. Cl. 251—306 **1 Claim**



1. In a rotary fluid control valve of the butterfly type, said valve including a housing and a butterfly valve disc, an annular valve seat comprising:

a radially intermediate metal support portion, said intermediate support portion approximating the shape of an S having radially outer, intermediate and inner parallel legs connected by radially inner and outer, axially opposed

bases, wherein said intermediate leg includes an axial extension defining a stop, wherein said support portion is of substantially constant thickness along the length of said S-shape, whereby said support portion can flex in response to thermal and mechanical stresses, wherein said intermediate support portion is positioned within a recess of said valve body having radial walls, and wherein walls of said intermediate portion are positioned closely adjacent to, and spaced from, said radial walls of said recess, whereby said radial walls of said recess limit axial flexure of said intermediate portion;

a radially outer metal tail portion, wherein said tail portion is circumferentially continuous, is unitarily formed with an end of said outer leg opposite said radially outer base, is clamped between two portions of sid valve body, and is elongated radially outward from said radially outer leg;

a radially inner metal sealing portion comprising:

(a) an annular sealing leg extending radially towards said valve disc from an area of intersection of said radially inner base and said radially inner parallel leg,

(b) a metal sealing surface at a distal end of said sealing leg, said sealing surface defining an annular semi-torus, a radius of said sealing surface about an annular center line thereof being approximately 0.04 inches, said sealing surface being coated with a hard metallic material,

(c) an annular opposing leg extending obliquely from an end of said radially inner parallel leg opposite said sealing leg, and

(d) a shoulder on said sealing leg, and

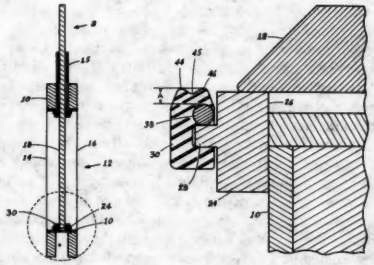
an elastomeric insert having a sealing surface and opposing projections, whereins said elastomeric insert is fitted onto said seat portion with one of said insert projections fitting into a recess defined in part by said sealing leg shoulder and a second of said insert projections is crimped by said opposing leg, and wherein said elastomeric insert sealing surface is substantially axially spaced from said metal sealing surface and is positioned so as to be engagable with said valve disc, whereby said metal sealing surface can engage said valve disc upon destruction of at least a portion of said insert.

4,623,122

VALVE WITH IMPROVED SEAL

David L. Gambetta, Tupelo, Mich., assignor to ITT Corporation, New York, N.Y.

Filed Jun. 19, 1985, Ser. No. 746,616
Int. Cl.[4] F16K *3/30, 3/02*
U.S. Cl. 251—328 **14 Claims**



1. A valve comprising:

a valve body having an inlet portion and an outlet portion forming a passageway, said valve body further having a first leg projecting radially into said passageway;

a valve member located in said valve body adjacent one side of said leg and mounted for movement between an open position in which fluid flows in said passageway and a closed position in which fluid is prevented from flowing through said passageway;

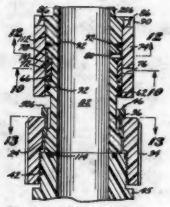
a first resilient annular seal having concentric inner and outer peripheral surfaces and an adjacent sealing face, said outer peripheral surface being formed with a radially inwardly extending groove having a pair of parallel, spaced-apart sidewalls, said first leg extending into said groove such that said sidewalls each bear against a leg surface, a reinforcing ring of a rigid material embedded in said first seal between said first leg and said sealing face and extending along the adjacent sidewall of said groove which is closer to said sealing face so as to bear against the adjacent leg surface and resist the forces of a fluid acting on the valve member when said valve member is in its closed position.

4,623,123

CONDUIT COUPLING

Paul Traylor, 16591 Milliken Ave., Irvine, Calif. 92714

Filed Apr. 26, 1985, Ser. No. 727,930
Int. Cl.[4] F16K *31/00*
U.S. Cl. 251—340 **10 Claims**



1. A conduit coupling comprising:

a body having annular, axially extending outer, intermediate and inner sections, the exterior diameter of said intermediate section being less than that of said outer section to define an annular stop shoulder, and the exterior diameter of said inner section being less than that of said intermediate section to define an annular seating shoulder;

a union nut having an annular, radially inwardly directed flange defining an annular locking shoulder, said nut further having connection means at its outer extremity for connection to a complementary conduit fitting, the interior diameter of said flange being greater than the exterior diameter of said other section whereby said flange is adapted to pass inwardly over said body to an inward position adjacent said inner section; and

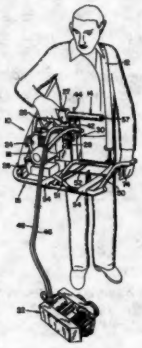
an annular resilient and circumferentially discontinuous clip having a radially compressed condition for location upon said inner section in a first state, in engagement with said seating shoulder of said body, and enabling passage of said flange to an inner position, the exterior dimensions of said clip in its expanded condition enabling said locking shoulder of said flange to engage said clip and move it to a second state in engagement with said stop shoulder of said body whereby said nut is prevented from passing outwardly and separating from said body, said clip including an annular channel adapted to receive said flange and bounded by annular inner and outer shoulders, the exterior diameter of said inner shoulder or compression of said clip in said first state being greater than the internal diameter of said flange whereby said inner shoulder is located outwardly of said nut in said first and second states of said clip.

4,623,124

PORTABLE HYDRAULIC POWER UNIT

Earl R. Lewis, 825 S. Hill Dr., Reedsport, Oreg. 97467

Filed May 28, 1985, Ser. No. 737,720
Int. Cl.[4] B66D *1/14, 1/08*
U.S. Cl. 254—350 **6 Claims**



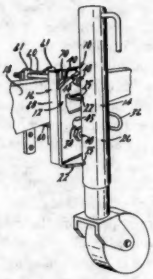
1. A portable hydraulic power unit, comprising:
power means for providing hydraulic fluid under pressure;
portable frame means supporting the power means mounted thereto, the frame means including hollow tubing comprising a fluid reservoir means for circulating the hydraulic fluid for cooling; and
tool means detachably mounted to the frame means and hydraulically connected to and driven by the power means for operation remote from the power means while being driven by the power means; and carrying means for carrying the portable frame means and power means while the tool means is in operation.

4,623,125

SWIVEL JACK

Edward Ebey, Nashotah, Wis., assignor to Fulton Manufacturing Corporation, Milwaukee, Wis.

Filed Jul. 27, 1984, Ser. No. 635,066
Int. Cl.[4] B60S *9/02*
U.S. Cl. 254—420 **17 Claims**



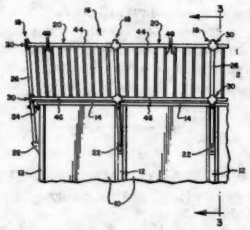
1. A jack support for securing a jack to a supportable body, said jack support characterized by:
a first bracket member being rigidly securable to a jack;
a second bracket member being rigidly securable to the body;
one of said first and second bracket members having a first engagement means extending therefrom with the other of said first and second bracket members having a first receiving means for slidably receiving said first engagement means;
interlocking means for retaining the first bracket adjacent the second bracket;
one of said first and second bracket members having a second engagement means with the other of said first and second bracket members having a second receiving means formed in part by a notch therethrough for slidably receiving said second engagement means when said first bracket is in a support position;
said first and second engagement means being substantially parallel to each other;
said first and second brackets having peripheral side portions that abut each other to prevent relative rotation of said brackets about an axis that extends transversely through both said engagement means;
the first bracket member being slidably movable such that said second engagement means is free to exit said notch and said first bracket is then free to pivot about an axis extending axially through said first engagement means to a stored position; and
lock means for retaining said second bracket in said stored position.

4,623,126

PERIMETER FENCE FOR ABOVE-GROUND SWIMMING POOLS

Frederick M. Pettit, 1411 Point Abino Road S., Ridgeway, Ontario, Canada L0S 1N0

Filed Dec. 16, 1983, Ser. No. 562,414
Int. Cl.[4] E04H *17/18*
U.S. Cl. 256—25 **7 Claims**



3. A perimeter fence for an above-ground swimming pool of the type having a pool wall, a plurality of spaced-apart pool wall supports, and a top rail extending between said vertical pool wall supports, said perimeter fence comprising:
a number of fence post assemblies and mounting assemblies equal in number to the number of vertical pool wall supports of the pool and also a plurality of rail assemblies, one less than the number of vertical pool wall supports; each fence post assembly including a tubular post having an opening at one end, and a transversely extending aperture, and a pair of spaced apart outwardly extending rail connectors, each having tubular side openings; each of the mounting assemblies including a bottom post connector having an outwardly extending tubular projection receivable within the opening at one end of the tubular post, the bottom post connector being adapted to be secured to an associated vertical pool wall support in such a manner that the outwardly extending tubular projection extends in an upward direction, and an L-shaped top post connector having an elongated threaded leg and a shorter apertured leg which is adapted to be secured to an associated wall support in such a manner that the elongated threaded leg extends horizontally away from the pool, and each of the rail assemblies including upper and lower horizontal rails and a plurality of interconnecting vertical rails, the upper

and lower rails being receivable within the tubular side openings.

4,623,127

SPACER MEMBERS

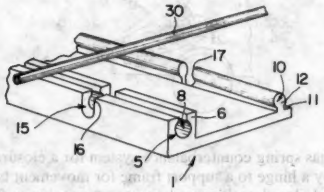
Jan H. Wier, "Burleigh", Bulls, New Zealand

Filed Oct. 5, 1984, Ser. No. 657,822

Claims priority, application New Zealand, Oct. 8, 1983, 203823

Int. Cl.⁴ B25F *27/00*

U.S. Cl. 256—35 **2 Claims**



1. A spacer member for maintaining the structurally juxtaposed relationship of adjacent wires of a fence including two lengths of a strip member which is relatively rigid throughout its longitudinal axis, each length of strip member including on one flat side thereof a first engaging male member and a second laterally spaced complementary engaging female member protruding from said one side of and adjacent respective edges of said strip member and lying in a common plane, and said strip member including a plurality of transversely extending aligned recesses provided in said protruding engaging members, the two lengths of said strip member being mutually self engageable for enclosing adjacent wires of a fence in adjacent complementary recesses in the lengths of strip member to provide a spacer member which maintains the juxtaposed relationship of at least two adjacent wires of a fence.

4,623,128

FENCING AND LIKE STRUCTURES

Geoffrey C. Dutch, Fennell Bay, and Trevor K. Dutch, Narrabri, both of Australia, assignors to Costanza Pty. Limited, New South Wales, Australia

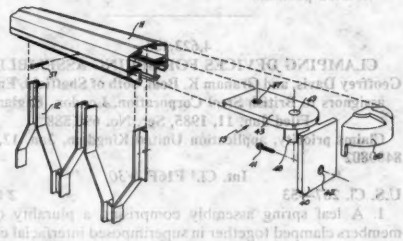
PCT No. PCT/AU84/00037, § 371 Date Nov. 8, 1984, § 102(e) Date Nov. 8, 1984, PCT Pub. No. WO84/03532, PCT Pub. Date Sep. 13, 1984

PCT Filed Mar. 8, 1984, Ser. No. 674,155

Claims priority, application Australia, Mar. 8, 1983, PF8336

Int. Cl.⁴ E04H *17/14*

U.S. Cl. 256—65 **12 Claims**



1. A fencing or like structure comprising:

(i) a pair of spaced apart upright post members each having vertically extending channel means with the channel means of each post facing one another,

(ii) a top rail of inverted channel form extending between the post members and having a pair of opposed, inwardly directed webs defining therebetween a panel-receiving throat that extends along the rail,

(iii) bottom rail means extending between the post members and having a panel-receiving throat that extends along the bottom rail means,

(iv) a rectangular panel extending between and secured to the top rail and the bottom rail means with the top edge of the panel in the throat of the top rail and its bottom edge in the throat of the bottom rail means,

(v) means for securing the end of the top rail to the respective post members, said securing means including:

(a) a bracket having a first flange located in the channel means of the post member and a second flange located in the end of the rail,

(b) means for fixing the first flange to the post member, and,

(c) means for securing the second flange to the inwardly directed webs of the rail,

wherein the top rail has a panel-receiving crown bounded by interior flanges that engage the top edge of the panel, and

(vi) third flanges adapted to engage the panel therebetween and extending to a point below said inwardly directed webs.

4,623,129

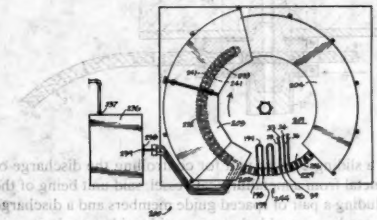
APPARATUS FOR MAKING RETRACTILE CORDS

Robert P. Loesch, Omaha, Nebr., assignor to AT&T Technologies, Inc., Berkeley Heights, N.J.

Division of Ser. No. 466,743, Feb. 15, 1983, Pat. No. 4,551,185. This application Jul. 10, 1985, Ser. No. 753,503

Int. Cl.⁴ C21D *1/00*

U.S. Cl. 266—104 **1 Claim**



1. An apparatus for straightening portions of wound retractile cordage, said apparatus comprising:

a turntable for moving at least one length of wound retractile cordage along a path of travel;

a fixture which is disposed about a peripheral edge of the turntable, said fixture including a plurality of arcuate segments spaced along the periphery of the turntable for receiving cordage portions to be straightened, each of said segments including a plurality of spaced slots disposed radially of said turntable, said segments having inner and outer surfaces which are generally parallel to the peripheral edge of said turntable, each of said slots having adapted to hold a portion of retractile cordage in a straight configuration; and

annealing means for heating the portion of each length of cordage held in a slot to cause the portion to retain its straight configuration after it has been removed from said fixture, said annealing means including:

induction heating means positioned along the path of travel in a predetermined position with respect to said fixture for heating the portion of each retractile cordage, said heating means being effective to confine the heat applied to each cordage substantially to the portion which is disposed in said slot in said fixture, said heating means including;

an inductive heating source;

a heating coil which is disposed above said fixture and which is connected to said heating source, said coil having a supply leg and a return leg; and

a plurality of flux concentrators which are disposed along said coil, said flux concentrators being disposed continuously along the portion of each leg of said coil which spans the slots of said fixture and spaced a predetermined distance above said slots of said fixture with their outer surfaces aligned with other surfaces of said segments so that heat energy is concentrated substantially only into the portions of the cordage which are held in the slots.

4,623,130

REFRACTORY MEMBER FORMED OF FIBER MATERIAL FOR USE IN SLIDING CLOSURE UNIT

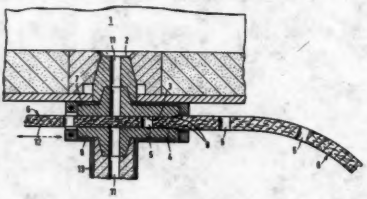
Raimund Brückner, Bremthaler Weg 7, 6238 Hofheim/Wildsachsen; Axel Eschner, Wilhelm-Busch-Str. 3, 6719 Göllheim, and Hermann Leupold, Erickaweg 28, 6229 Walluf, all of Fed. Rep. of Germany

Filed Aug. 11, 1983, Ser. No. 522,648

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1982, 3230107

Int. Cl.⁴ B22D *41/08*

U.S. Cl. 266—271 **38 Claims**



31. In a sliding closure unit for controlling the discharge of molten metal from a metallurgical vessel, said unit being of the type including a pair of spaced guide members and a discharge control member movable between said guide members, said control member having therethrough at least one discharge opening to be moved into or out of alignment with a discharge opening of the metallurgical vessel, the improvement wherein said control member is formed of a ceramic fiber material having embedded therein tar or pitch as a refractory bonding agent.

4,623,131

MOLTEN METAL HANDLING VESSELS

Christopher T. Roberts, Birmingham, England, assignor to Foseco Trading A.G., Chur, Switzerland

Filed Dec. 6, 1982, Ser. No. 447,133

Claims priority, application United Kingdom, Dec. 24, 1981, 8138993

Int. Cl.⁴ C21B *7/04*

U.S. Cl. 266—280 **5 Claims**

1. A shaped, refractory, heat-insulating article for use in an inner, expendable lining of a molten metal handling vessel comprising particulate zircon, calcined bauxite and a binder, wherein the weight ratio of zircon to calcined bauxite is in the range of 3:1 to 1:1.

4,623,132

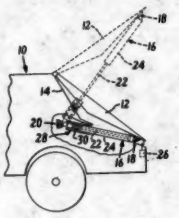
GAS SPRING COUNTERBALANCE SYSTEM

Lawther O. Smith, Doylestown, Pa., assignor to Fichtel & Sachs Industries, Inc., Colmar, Pa.

Filed Feb. 27, 1985, Ser. No. 706,158

Int. Cl.⁴ F16F *9/54*

U.S. Cl. 267—34 **5 Claims**



1. In a gas spring counterbalance system for a closure member held by a hinge to a support frame for movement between opened and closed positions relative to an opening in the support frame, said system including a gas spring enclosing a pneumatic fluid attached at one end to the closure member and at the other end to the support frame for assisting in moving said closure member about said hinge, the improvement comprising:

the working stroke of said gas spring relative to the distance between the points of attachment of the spring to the closure member and the support frame being such that the spring reaches its fully retracted position before the closure member reaches said closed position;

stop means carried by said gas spring for defining said fully retracted position and operative thereat for transmitting loads through said spring independently of the pneumatic fluid in said spring; and

supplemental spring means mounted between at least one end of the gas spring and the point of attachment proximate said end, for resiliently permitting the closure member to be moved from the position at which said gas spring is fully retracted to said closed position and for thereafter resiliently isolating the gas spring from relative longitudinal movements between the gas spring and the lastmentioned attachment point when the closure member is in said closed position, and characterized in that said supplemental spring means is preloaded to a force equal to or slightly greater than the pushout force exerted by the gas spring at a position just prior to said fully retracted position, whereby said supplemental spring means is not further compressed until the gas spring approaches said fully retracted position and thereafter is compressed to an intermediate degree when said gas spring is in said fully retracted position.

4,623,133

CLAMPING DEVICES FOR SPRING ASSEMBLIES

Geoffrey Davis, and Graham K. Beal, both of Sheffield, England, assignors to British Steel Corporation, London, England

Filed Jan. 11, 1985, Ser. No. 690,588

Claims priority, application United Kingdom, Jan. 12, 1984, 8400802

Int. Cl.⁴ F16F *1/30*

U.S. Cl. 267—53 **2 Claims**

1. A leaf spring assembly comprising a plurality of leaf members clamped together in superimposed interfacial contact by at least two spaced apart clamping devices located one towards each end of the assembly, each clamping device comprising:

(i) A U-shaped clasp formed from metal rod, bar or the like;

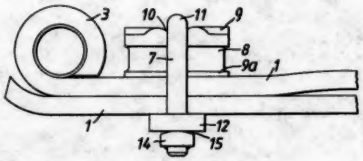
(ii) a friction block of vulcanised rubber;

(iii) a flat metal plate bonded to the lower surface of the

vulcanised rubber block and formed with a lower surface which makes full facial contact with the adjoining surface of the uppermost leaf of the assembly;

(iv) a metal plate bonded to the upper surface of the vulcanised rubber block which lies in contact with the underside of the arch of the U-shaped clasp;

(v) a metal end plate secured to the exposed surface of the lowermost leaf of the assembly and formed with apertures so dimensioned that the arms of the clasp protrude there-



through with a clearance defined between the clasp arms and portions of the metallic boundaries of the apertures;

(vi) a closure plate having an arcuate upper surface which bears against the exposed surface of the end plate and formed with apertures through which the clasp arms protrude;

(vii) and means for securing the closure plate to the free ends of the clasp arms whereby a desired clamping force is imposed on the members embraced by the clasp.

4,623,134

HYDRAULIC ACCUMULATOR FOR PROVIDING PRESSURIZED FLUID

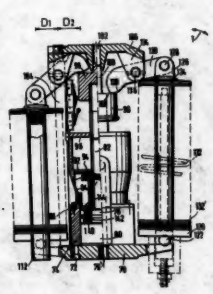
Gerhard Körner, Schriesheim; Edelwald Lutz, Rodgau, and Horst Plettner, Hanau, all of Fed. Rep. of Germany, assignors to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 527,572, Aug. 29, 1983, abandoned. This application Dec. 16, 1985, Ser. No. 810,822

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1982, 3232074

Int. Cl.[4] F16F *9/18*; H01H *35/38*

U.S. Cl. 267—124 **3 Claims**



1. Hydraulic accumulator for providing pressurized fluid for a hydraulic system, comprising a cylinder, a piston movably disposed in said cylinder defining a space in said cylinder on one side of said piston for pressurized fluid, a mechanical spring device being in the form of a plurality if compression springs evenly distributed about the periphery of the hydraulic accumulator and connected to said piston for maintaining pressure in the pressurized fluid in said space, rocking levers each being pivotable in vicinity of the center thereof and having one end engaging a respective one of said compression springs and another inner end acting on said piston and permanently transfering motion of said compression springs to said piston for maintaining a constant pressure in the pressurized fluid, said rocking levers being substantially perpendiclar to the longitudinal axis of said piston and rotatable in a plane extending through the axis of said piston, a support integral with said piston having a support surface thereon, at least said inner end of said rocking lever having a substantially semicircular contact cam surface resting against and rolling on said support surface for equalizing changes in the force of said compression springs and maintaining pressure in the pressurized fluid for each position of said piston, a base plate on which said cylinder is fastened, a cross piece spaced at a distance from said base plate, connecting bolts connected from said cross piece to said base plate, and a piston rod connected to said piston, said cylinder, piston and piston rod being accomodated between said base plate and said cross piece, and said rocking levers being pivotably supported on said cross piece.

4,623,135

VIBRATION DAMPING DEVICE

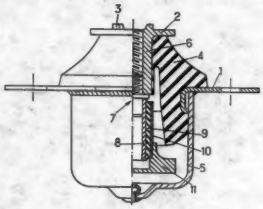
Jean Ray, Donnemain, France, assignor to Hutchinson, Paris, France

Filed Jul. 20, 1984, Ser. No. 632,842

Claims priority, application France, Jul. 21, 1983, 83 12046

Int. Cl.[4] F16M *1/00*; F16F *9/04*

U.S. Cl. 267—140.1 **10 Claims**



1. A device for damping the vibrations which may occur between a fixed support and a mobile member, comprising a main resilient element inserted between said support and said member and a damping system mounted in parallel across the main resilient element and comprising a tubular frame connected to the mobile member and a piston resiliently mounted on the frame and completely immersed in a damping medium contained in a bowl integral with the fixed support, wherein the piston is mounted on the tubular frame with interposition therebetween of a sleeve made from a resilient material said sleeve being concentrically fixedly mounted to said tubular frame and fixedly mounted to said piston such that said resilient sleeve and said piston and damping medium are serially connected between the fixed support and the mobile member, and so that said piston can move upwardly and downwardly from its rest position with respect to said tubular frame.

4,623,136

PRINTING PRESS

Ernest B. Bunch, Jr., 9619 N. 21st Dr., Phoenix, Ariz. 85021

Division of Ser. No. 678,268, Dec. 28, 1984, Pat. No. 4,558,644. This application Dec. 17, 1985, Ser. No. 809,729

Int. Cl.[4] B41F *13/54*

U.S. Cl. 270—1.1 **1 Claim**

1. Apparatus for imprinting an elongate strip of paper moving along a path of travel through the apparatus, said paper strip having a pair of parallel elongate peripheral edges, said apparatus including

(a) primary frame means;

(b) a roll of paper rotatably mounted on said frame means to supply said strip of paper moving through said apparatus;

(c) at least one drum rotatably mounted on said frame means

for contacting and imprinting said strip of paper moving through said apparatus;

(d) roller means rotatably mounted on said frame means and adapted to contact and form transverse, parallel lines of weakening at spaced intervals along said paper strip moving through said apparatus;

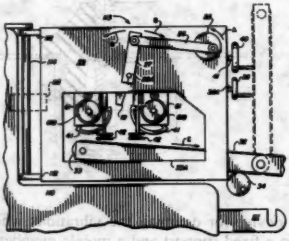
(e) a take-up roller for receiving said paper strip after said strip has contacted and moved past said imprinting drum and said roller means;

(f) a plurality of guide rollers rotatably mounted on said frame means and contacted by said strip of paper moving through said apparatus; said guide rollers, imprinting drum and roller means generally defining said path of travel of said strip of paper from said supply roll through said apparatus, one of said guide rollers being positioned along said path of travel intermediate said roller means and take-up roller, said paper strip moving through said apparatus along said path of travel within an envelope generally bounded by a pair of imaginary vertical parallel planes each intersecting one of said elongate peripheral edges of said paper strip;

(g) secondary frame means operatively associated with said primary frame means;

(h) an oscillating chute mounted on said secondary frame means for alternately distributing at least some of said lines of weakening in said paper strip in substantially opposite directions;

(i) a feed roller carried on said secondary frame means for dispensing said continuous strip of paper into said oscillating chute;



(j) folding means carried on said secondary frame means and operatively associated with said oscillating chute for urging said paper distributed by said chute into a folded condition, said folding means including

(i) spirals shaped and dimensioned to receive and carry away from said oscillating chute creased edges of paper distributed by said chute, said spirals being independently adjustable prior to the operation of said apparatus, and

(ii) beaters for periodically tamping said paper distributed by said chute, said beaters assisting in the folding and positioning of said paper and being independently adjustable prior to the operation of said apparatus,

said spirals and beaters moving in synchronous relationship with said chute during the operation thereof,

(k) a support surface mounted on said apparatus for receiving paper dispensed by said spirals and beaters;

(l) paper stops mounted on said secondary frame means and positioned above said support surface, each of said paper stops having at least one upstanding face for contacting and preventing the lateral travel of creased edges of paper distributed by said chute;

(m) first gear train means carried on said primary frame means for transmitting motive power to at least one of the group consisting of said guide rollers, said take-up roller, said imprinting drum, and said roller means mounted on said primary frame means to draw said paper strip from said supply roller through said apparatus and along said path of travel;

(n) power means to drive said first gear train means;

(o) second gear train means carried on said secondary frame means for driving and transmitting motive power to said feed roller, oscillating chute and folding means such that generally synchronized movement thereinbetween is maintained, a portion of said gear train means actuating said chute and folding means without actuating said feed roller;

(p) means for driving said second gear train means;

said secondary frame means being connected to said primary frame means for movement between at least two operative positions,

(q) a first operative position with said feed roller generally parallel to said guide rollers, supply roll and takeup roller, and positioned to receive said paper strip from said guide roller positioned intermediate said roller means and said take-up roller such that said paper strip received by said feed roller generally lies within said envelope bounded by said first and second parallel imaginary planes; and,

(r) a second operative position with said feed roller and secondary frame means generally displaced to a position outside of said envelope bounded by said first and second parallel imaginary planes;

said paper strip moving through said apparatus being directed from said guide roller positioned intermediate said roller means and said take-up roller to said feed roller and through said chute and folding means when said secondary frame means is in said first operative position; and,

said take-up roller when said secondary frame means is in said second operative position,

(s) means carried on said primary frame means for, when said secondary frame means is in said first operative position, simultaneously advancing or retarding said the movement of said strip of paper through said chute and folding means.

4,623,137

PAPER FEEDER EQUIPPED WITH COPYING PAPER CASSETTES

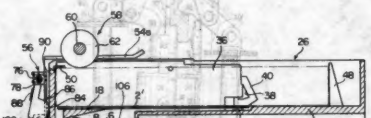
Yoichiro Irie, Suita; Hiroshi Kimura, Habikino; Masahiko Hisajima; Kiyoshi Shibata, both of Osaka, and Yasuhiko Yoshikawa, Ikoma, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Sep. 22, 1983, Ser. No. 534,620

Claims priority, application Japan, Sep. 28, 1982, 57-167600

Int. Cl.[4] B65H *1/24*

U.S. Cl. 271—160 **5 Claims**



1. In a paper feeder apparatus of a copying machine and of the type including a cassette-receiving section within a housing of the copying machine, a plurality of copying paper cassettes selectively alternately insertable into said cassette-receiving section, each said cassette being constructed to contain therein a plurality of copying paper sheets of a size different from the size of copying paper sheets in other said cassettes, each said cassette including a main body having a bottom wall with an opening in a forward end portion thereof and a bottom plate mounted on said bottom wall of said main body and pivotable with respect thereto about a rear end portion as a fulcrum, the respective said plurality of copying paper sheets being stacked on said bottom plate, a paper feeding member positioned to confront an uppermost copying paper sheet of a respective said cassette inserted into said cassette-receiving section, and press-

contacting means mounted on the housing for extending through said opening in said bottom wall of said main body of the respective said cassette inserted into said cassette-receiving section and contacting said bottom plate thereof and urging said bottom plate to pivot upwardly about said fulcrum and for thereby elastically pressing the uppermost copying paper sheet against said paper feeding member, whereby different moments due to the different weights of said pluralities of different size copying paper sheets in the respective said cassettes act downwardly against the urging force of said press-contacting means, thereby tending to result in the application of different contact pressures of the uppermost copying paper sheets of the respective said cassettes against said paper feeding member, the improvement comprising means for overcoming such tendency and for ensuring that the contact pressure exerted on said paper feeding member by the uppermost copying paper sheet of a respective said cassette containing relatively large size copying paper sheets substantially is equal to the contact pressure exerted on said paper feeding member by the uppermost copying paper sheet of a respective said cassette containing relatively small size copying paper sheets, said means comprising:

said bottom plate of at least said cassette containing said relatively large size copying paper sheets having integral therewith and extending downwardly therefrom a compensation member located at a position to be contacted by said press-contacting means, thereby pivoting said bottom plate upwardly by an extent to compensate for said different moments.

4,623,138

PAPER FEEDING DEVICE FOR COPYING MACHINE

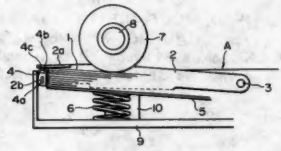
Katsumi Sakamaki, and Yasuyuki Fukagawa, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Aug. 8, 1983, Ser. No. 521,508

Claims priority, application Japan, Aug. 6, 1982, 57-136376; Aug. 6, 1982, 57-136377; Aug. 6, 1982, 57-136378

Int. Cl.⁴ B65H *3/54, 3/56, 1/12*

U.S. Cl. 271—170 **3 Claims**



1. A paper feeding device, comprising:

a paper cassette having a lower support surface for supporting a stock of papers, said paper cassette having a first end from which papers are provided from said cassette in a paper feeding direction;

paper holding means for holding said stack of papers on said lower support surface, said paper holding means including a holding arm arranged for up and down movement and having an end adjacent said first end of said cassette, and a paper pressing member fixed to said end of said holding arm for resting on a forward end of an uppermost paper of said paper stack;

paper feeding means for feeding said uppermost paper from said stack by contacting said uppermost paper at a position displaced from said paper pressing member in a direction opposite said paper feeding direction; and

paper feed controlling means, including an elastic member provided at said end of said holding arm beneath said pressing member and bias means for biasing said elastic member and pressing member for relative movement toward one another such that an upper surface of said elastic member is pressed against said paper pressing member, said elastic member being elastically deformable and forming a gap between itself and said paper pressing member when said uppermost paper is fed from said stack by said paper feeding means, so as to pass said uppermost paper,

said elastic member including an upper hollow space therein, said upper surface being curved arcuately, said upper surface being normally contacted with said paper pressing member.

4,623,139

PAPER TRANSPORTING MECHANISM OF A PRINTER

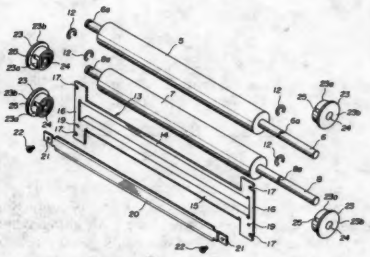
Yoshikazu Ebata, Tokyo, Japan, assignor to Janome Sewing Machine Industry Co., Ltd., Japan

Filed Nov. 7, 1985, Ser. No. 795,951

Claims priority, application Japan, Nov. 9, 1984, 59-169165[U]

Int. Cl.⁴ B65H *5/06*

U.S. Cl. 271—272 **3 Claims**



1. A paper transporting mechanism of a printer having a printing head mounted on a carriage reciprocatingly moved along a guide shaft extended between two oppositely arranged side frames transversely of a printing paper to be printed by the printing head and a platen arranged opposite to the printing head with a clearance being provided therebetween for passing the printing paper therethrough, said paper transporting mechanism comprising:

(a) first frictional means including a first rotational roller having a roller shaft providing opposite ends, and a second roller arranged in contact with said first rotational roller and frictionally rotated in association with the latter to transport said printing paper in the direction toward said printing head and said platen;

(b) second frictional means including a second rotational roller having a roller shaft providing opposite ends, and a third roller arranged in contact with said second rotational roller and frictionally rotated in association with the latter to transport said printing paper in the direction away from said printing head and said platen;

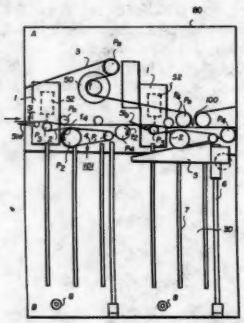
(c) guide means provided between said first and second frictional means, said guide means including a first guide plate arranged to guide said printing paper in the direction toward said printing head and said platen and a second guide plate arranged to guide said printing paper in the direction away from said printing head and said platen, said first and second plates having opposite ends integrated to each other to provide opposite insertions; and

(d) support means including a predetermined number of bearings mounted in pairs on said oppositely arranged side frames, each of said bearings having a hole for receiving therein each of the ends of said roller shafts and a groove for receiving therein each of said insertions of said guide means, to thereby support said rotational rollers and said guide means on said side frames, said insertions preventing said bearings from being rotated with respect to said side frames.

4,623,140
APPARATUS FOR THE DEFLECTING AND STACKING OF LETTERS AND THE LIKE

Roland Allio; Gilbert Del Fabbro; Francois Debrabant, and Francois Gillet, all of Paris, France, assignors to Hotchiss-Brandt-Sogeme-H.B.S., Paris, France

Filed Jan. 27, 1983, Ser. No. 461,492
Claims priority, application France, Feb. 19, 1982, 82 02793
Int. Cl.[4] B65H *39/10*
U.S. Cl. 271—305 6 Claims



1. An apparatus for deflecting and stacking postal material as a function of their destination, said apparatus comprising:

means defining a main conveyance path along which said postal material is conveyed in a conveyance direction, said main conveyance path defining means including at least one drive belt means and at least one intermediate belt means, said drive and intermediate belt means being frictionally engaged along a predetermined length thereof to establish therebetween a portion of said main conveyance path;

pallet means defining a planar stacking surface upon which said postal material is stacked and including means to mount said pallet means to permit displacement thereof in a displacement direction in response to the weight of postal material stacked upon said stacking surface;

means defining a deflecting path along which postal material, deflected from said main transfer path, is conveyed in a deflection direction, said deflection path defining means including (a) deflecting means defining a deflecting surface mounted for movement between a rest position wherein said postal material is permitted to be conveyed along said main conveyance path and a deflection position wherein said deflecting surface extends into said main conveyance path to deflect selected ones of said postal material into said deflection path, said deflecting means for deflecting said selected ones into said deflection path and for establishing an upstream portion of said deflection path, (b) deflecting belt means disposed downstream of said deflecting means to establish a downstream portion of said deflecting path, said deflecting belt means for capturing said deflected ones and conveying said deflected ones along said conveyance direction from said upstream portion to said downstream portion, wherein said deflecting belt means includes a first length in frictional engagement with said intermediate belt means to be driven thereby and a second length in confronting parallel relationship to said stacking surface, said second length establishing said downstream portion, and (c) stop means disposed at an end of said downstream portion against which said selected ones contact for stopping the conveyance of said selected ones along said deflection path at a location to form a stack of said selected ones on said stacking surface; and

means biasing said pallet to urge the uppermost one of said postal material in said stack against said second length of said deflecting belt means to compress said postal material in said stack against said second section, wherein successive selected ones of said postal material conveyed along said deflection path are stacked between said uppermost one of said postal material in said stack and said deflecting belt means.

4,623,141
HAND HELD ARM AND HAND MUSCLE BUILDER

Lawrence P. Salvino, 23557 Milton Rd., Wauconda, Ill. 60084

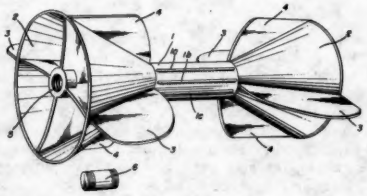
Filed Apr. 29, 1985, Ser. No. 728,349
Int. Cl.[4] A63B *21/14*
U.S. Cl. 272—68 1 Claim

1. An exercise device for exercising the arms and hands and held in one hand comprising a heavy coiled spring having two ends which extend downwardly and angularly outwardly, said ends provided with handles, a tube of flexible material extending through the interior of said coiled spring, a rod extending through said tube and said rod threaded on both ends, and a pair of nuts and washers respectively received on each of said threaded ends for drawing said tube of flexible material together to increase the resistance of said coiled spring.

4,623,142
HAND HELD, MULTI-DIRECTIONAL DEVICE FOR AQUATIC EXERCISING

Bruce MacKechnie, 4954 Sauquoit La., Annandale, Va. 22003

Filed Jan. 31, 1984, Ser. No. 575,589
Int. Cl.[4] A63B *21/00*
U.S. Cl. 272—116 6 Claims



1. An aquatic exercising device comprising:

a hollow handle member having a first end and a second end;

said handle member being substantially round and includes a textured surface, said substantially round handle member enables an individual to grip the handle at any point thereabout while said textured surface permits an individual to securely grasp the handle member;

a first substantially funnel shaped support operatively connected to said first end of said handle;

a second substantially funnel shaped support operatively connected to said second end of said handle;

said first and second substantially funnel shaped supports

being hollow and said hollow space being in communication with said hollow space in said handle member to permit water to flow therebetween;

a first plurality of vanes operatively affixed to said first substantially funnel shaped support and extending within said hollow space of said first substantially funnel-shaped support; and

a second plurality of vanes operatively affixed to said second substantially funnel shaped support and extending within said hollow space of said second substantially funnel shaped support;

whereby movement of said aquatic exercising device through a body of water produces a resistance to enhance the exercising capability of an individual utilizing the aquatic exercising device;

said plurality of first and second vanes includes a first resistance member which is smaller in size relative to the vane forming a second resistance member to provide substantially different resistance as each of the vanes are moved through a body of water and said second resistance member projects outwardly from said funnel shaped supports beyond the diameter of the largest opening of said funnel shaped supports for improving the stability of the aquatic exercising device as it moves through a body of water.

4,623,143

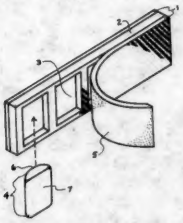
WRIST AND ANKLE WEIGHTS

Mary F. Wuellenweber, P.O. Box 828, Concord, N.H. 03301

Filed Jan. 15, 1985, Ser. No. 691,697

Int. Cl.[4] A63B *23/04*

U.S. Cl. 272—119 **10 Claims**



1. A wrist and ankle weight device which comprises:

a substantially flexible rectangular middle layer having at least one opening receiving at least one weighted member;

substantially flexible rectangular front and back layers;

a cover for enveloping said layers; and

a removable outer cover for enveloping said layers and said cover,

said outer cover including a closure device and securing means for securing said device to the limb of a wearer.

4,623,144

WEIGHT LIFTING TYPE ABDOMINAL/BACK EXERCISING APPARATUS

Gary Rockwell, LaGrange, Ga., assignor to Diversified Products Corporation, Opelika, Ala.

Filed Jan. 31, 1985, Ser. No. 696,704

Int. Cl.[4] A63B *21/00*

U.S. Cl. 272—134 **14 Claims**

1. An abdominal/back exercising apparatus comprising:

a frame;

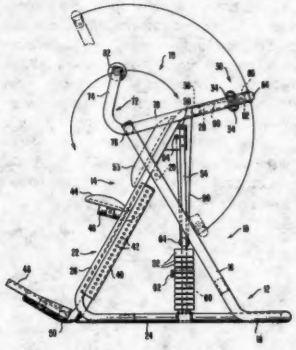
lever means pivotally attached to said frame for pivotal movement about a pivot axis, said lever means having a torso-engaging portion displaced from said pivot axis;

an elongated flexible element operatively coupled to said lever means;

movable element engaging means on said lever means displaced from said pivot axis, and fixed element engaging means carried by said frame adjacent and generally medially of the arc of travel of said movable element engaging means, said lever means being in a null position where said two element engaging means are nearest one another;

one of said movable or fixed element engaging means comprising anchoring means for firmly anchoring a portion of said flexible element;

the other of said movable or fixed element engaging means comprising guide means for retaining said flexible element and guiding its movement through said guide means, wherein pivotal movement of said lever means in either a first direction from said null position or a second opposite direction from said null position pulls said flexible element through said guide means;



resistance means carried by said frame and operatively coupled to said flexible element for resisting pulling movement of said flexible element by said lever means through said guide means; and

user support means carried by said frame for supporting a user with the front or back of the user's upper torso adjacent said torso-engaging portion of said lever means, whereby bending movement of the user about his waist in either a forward or backward direction against said torso-engaging portion rotates said lever means and pulls said flexible element outwardly through said guide means against the resistive force of said resistance means.

4,623,145

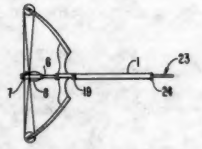
ARCHERY/PRACTICE EXERCISE DEVICE AND ATTACHMENTS THEREFOR

Theodore G. Paraskevakos, Melbourne, Fla., assignor to Indoor Archery, Incorporated, Melbourne, Fla.

Filed Feb. 29, 1984, Ser. No. 584,880

Int. Cl.[4] F41B *5/00*

U.S. Cl. 272—135 **13 Claims**



1. An archery practice/excercise device for detachable connection with a bow including a handleriser and a bow string for shooting regular arrows without connection of the arching practice/exercise device thereto, the device comprising a cylinder, means for partially closing a forward end of the

cylinder so as to delimit an orifice thereat through which air may be expelled from the cylinder, a piston mounted for movement within the cylinder, an arrow-like shaft having a forward end coupled to the piston and extending outwardly from a rear end of the cylinder, a closure means provided at the rear end of the cylinder for permitting the arrow-like shaft to pass therethrough and for supporting the arrow-like shaft, the arrow-like shaft being provided with a nock at the rear end for coupling with the bow string, means for enabling a detachable connection of the cylinder from the handleriser of the bow, the connection means being disposed to the rear end of the cylinder and secured thereto for enabling rigid attachment of the cylinder to the handleriser of the bow whereupon attachment to the handleriser, the cylinder extends forwardly of the handleriser for stabilizing the bow, whereby upon an archer coupling the nock to the bow string and drawing the arrow-like out of the cylinder to a desired length, the piston is caused to move from an initial forward position to a rearward position within the cylinder, and upon the archer releasing the arrow-like shaft from the drawn-out position, the piston is driven forwardly compressing air with the cylinder and forcing the air out of the orifice so that a substantial portion of the energy of the bow is absorbed by the cylinder, thereby enabling the archer to exercise and practice archery skills in a safe manner with the bow without the shooting of a regular arrow.

4,623,146

EXERCISE DEVICE

Byron R. Jackson, 30 Searing St., Hempstead, N.Y. 11550

Filed Jul. 26, 1982, Ser. No. 401,897
Int. Cl.[4] A63B *21/02*
U.S. Cl. 272—137 **8 Claims**

1. An exercise device comprising:

an elongate bar;

destabilizing means comprising an axially slidable cushion tube shorter than said bar, said cushion tube mounted in telescoping relation about said bar and having an inner diameter greater than the diameter of said bar;

antifriction bearing means for mounting said cushion tube for rotary and axial sliding movement in telescoping relation about said bar at a location intermediate the ends of said bar;

anti-movement means for limiting the extent of said axial sliding movement of said tube relative to said bar to confine said tube to positions generally at the center of said bar;

a first hand grip and a second hand grip, said first hand grip mounted in fixed position on said bar and on one side of said cushion tube, said second hand grip mounted in fixed position on said bar on the opposite side of said cushion tube;

a first weight and a second weight, said first weight positioned in a region at one end of the bar and said second weight position in a region at the opposite end of the bar; and

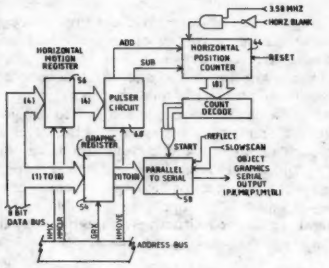
said destabilizing means for altering the center of gravity of the exercise device while the users hands remain on said first and said second hand grips.

4,623,147

PROCESS FOR DISPLAYING A PLURALITY OF OBJECTS ON A VIDEO SCREEN

Mark S. Ackerman, Belmont, and Glenn Parker, Watertown, both of Mass., assignors to General Computer Company, Cambridge, Mass.

Filed Sep. 20, 1983, Ser. No. 533,863
Int. Cl.[4] G06F *3/153*
U.S. Cl. 273—1 E **9 Claims**



1. A process for displaying a plurality of objects, used in conjunction with a video computer system (VCS) having a central processing unit (CPU) and a television interface adapter (TIA), comprising the steps of

(a) storing a set of data corresponding to a first high-resolution player graphics original image into first player graphics register means in the TIA;

(b) writing to reset address means in the TIA corresponding to the first high-resolution player graphics original image;

(c) storing into first control register means in the TIA data corresponding to the number of copies of said first high-resolution player graphics original image which is to appear along a series of horizontal scan lines, and storing data corresponding to the horizontal spacing between each of said copies; and

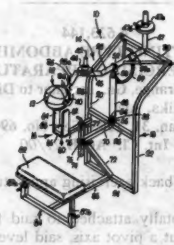
(d) repeating steps (b) and (c) at least once during the active portion of the horizontal scan line to display greater than three copies of the first high-resolution player graphics original image on a given series of horizontal scan lines.

4,623,148

FREE THROW SHOOTING PRACTICE DEVICE

Mark J. Juhl, P.O. Box 185, Bendena, Kans. 66008

Filed Apr. 17, 1986, Ser. No. 853,186
Int. Cl.[4] A63B *69/00, 23/00*
U.S. Cl. 273—1.5 A **15 Claims**



1. A basketball shooting practice device, comprising:

a basketball;

means for supporting said basketball in an elevated position, including an elongated arm, means operatively coupling said basketball to said arm adjacent one end of the arm,

and means supporting the other end of said arm for pivotal movement thereof about a generally horizontal axis; and shooting arm guide means adjacent said basketball and including a pair of upright, laterally spaced apart guide members oriented for receiving a shooter's arm therebetween.

4,623,149

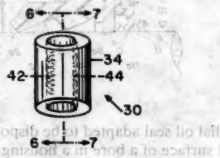
BOWLING BALL FINGER INSERT

Joseph Herman, 109 Timberland Dr., Elyria, Ohio 44035

Filed May 3, 1985, Ser. No. 730,166

Int. Cl.[4] A63B *37/00*

U.S. Cl. 273—63 A **1 Claim**



1. A finger grip insert for bowling balls, said insert comprising:

an elongated tubular resilient body having an outside wall surface and an inside wall surface, and first and second terminating ends, said resilient body being open at both ends, said terminating ends having a preselected slope relative to the axis of said elongated tubular body, said slope corresponding to the curvature of a spherical bowling ball,

said elongated tubular resilient body including first and second inside wall surfaces, said second wall surface having a plurality of grooves inscribed thereon, said grooves being perpendicular to the axis of said tubular body, said grooves located on a generally planar surface located generally parallel to a plane passing through the highest and lowest points of said sloped ends, the wall forming said second wall surface being of a greater thickness than the wall forming said first wall surface, and

said tubular resilient body being inserted in a bowling ball finger hole such that when said first terminating end is inserted first in a bowling ball for a left handed bowler, said grooves will be in contact with the finger tips of said left-handed bowler; and when said second terminating end is inserted in a bowling ball for a right-handed bowler, said grooves will be in contact with the finger tips of said right-handed bowler, said second wall surface providing a smaller opening within said elongated tubular body thereby providing greater friction to the finger of a user, and in both placements, the terminating end of said elongated tubular body, because of its sloped end, will be flush with the outside surface of said bowling ball.

4,623,150

ENVIRONMENTALLY ACCEPTABLE FRANGIBLE TARGET COMPOSITIONS

Vernon C. Moehlman; David W. Hicke, both of Joplin, Mo., and George A. Stagg, Jr., Wayne, N.J., assignors to Reagent Chemical and Research, Inc., Middlesex, N.J.

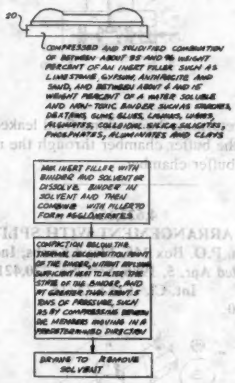
Continuation of Ser. No. 389,671, Jun. 18, 1982, abandoned. This application Jun. 10, 1985, Ser. No. 742,383

Int. Cl.[4] F41J *9/16*

U.S. Cl. 273—362 **27 Claims**

8. A projectable, frangible and environmentally acceptable target comprising an inert filler component and between about 4 and 10 weight percent of a solidified, naturally occurring water soluble binder component capable of forming agglomerates with said inert filler component without heating said binder component, said target being free of pitch, and said inert filler component being friable and relatively wettable with a solvent, whereby agglomerates of said inert filler component, said binder component, and said solvent can be produced, said target being prepared by the compression forming of said agglomerates at pressures of greater than about 5 tons and the subsequent drying of said compressed targets so as to solidify said binder and produce a hardened and rigidified target which is capable of withstanding the forces created by propulsion of said targets by means of a trap while also being capable of disintegration upon impact by a projectile.

11. A method of producing a projectable and frangible target


20
COMPRESSED AND SOLIDIFIED COMBINATION OF BETWEEN ABOUT 85 AND 96 WEIGHT PERCENT OF AN INERT FILLER SUCH AS LIMESTONE, GYPSUM, ANTHRACITE AND SAND, AND BETWEEN ABOUT 4 AND 15 WEIGHT PERCENT OF A WATER SOLUBLE AND NON-TOXIC BINDER SUCH AS STARCHES, DEXTRINS, GUMS, GLUES, LIGNINS, WAXES, ALGINATES, COLLOIDAL SILICA, SILICATES, PHOSPHATES, ALUMINATES AND CLAYS
MIX INERT FILLER WITH BINDER AND SOLVENT OR DISSOLVE BINDER IN SOLVENT AND THEN COMBINE WITH FILLER TO FORM AGGLOMERATES
COMPACTION BELOW THE THERMAL DECOMPOSITION POINT OF THE BINDER, WITHIN EFFICIENT HEAT TO ALTER THE STATE OF THE BINDER, AND AT GREATER THAN ABOUT 5 TONS OF PRESSURE, SUCH AS BY COMPRESSING OPPOSING MEMBERS MOVING IN A PREDETERMINED DIRECTION
DRYING TO REMOVE SOLVENT

comprising providing a mixture of an inert filler component, between about 4 and 15 weight percent of a binder component, and a solvent, so as to produce agglomerates of said inert filler component, compacting said mixture into the desired form of said target without the application of sufficient heat to alter the state of said binder component, and drying said compacted target by driving off said solvent at a temperature below the thermal decomposition point of said inert filler compound so as to solidify said binder and produce a hardened and rigidified target which is capable of withstanding the forces created by propulsion of said target by means of a trap while also being capable of disintegration upon impact by a projectile.

4,623,151

SEAL MEANS FOR A STIRLING ENGINE OR THE LIKE

Kazuo Kashiwamura, Amagasaki; Tadahiro Yoshida, Sakai; Toshihide Koda, Osaka, and Michio Fujiwara, Akashi, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 10, 1985, Ser. No. 721,702

Claims priority, application Japan, Apr. 13, 1984, 59-75333

Int. Cl.[4] F16J *15/16, 15/40*

U.S. Cl. 277—24 **17 Claims**

1. A seal means for use in the Stirling engine or the like, the seal means comprising:

a cylinder including a piston reciprocating therein, and a buffer chamber located in one of the spaces produced at the both sides of the piston;

a tank for storing the working fluid in the buffer chamber when the engine is at rest, the tank being located outside the cylinder;

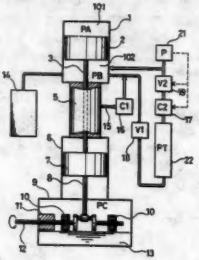
a means for introducing the working fluid in the tank into the buffer chamber under pressure when the engine is started;

a crank shaft driven by means of the piston through a piston rod;

a crankcase for accommodating the crank shaft;

a plurality of packings for preventing the working fluid in the buffer chamber from entering the crankcase by flowing along the outer surface of the moving piston rod, the

packings being arranged in contact with the outer surface of the piston rod; and



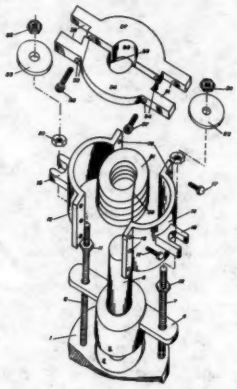
a means for returning the working fluid leaked in the packings from the buffer chamber through the moving piston rod to the buffer chamber.

4,623,152

SHAFT SEAL ARRANGEMENT WITH SPLIT HOUSING

Richard St Jean, P.O. Box 145, Floyd Knobs, Ind. 47119

Filed Apr. 5, 1985, Ser. No. 720,421
Int. Cl.[4] F16J *15/18*
U.S. Cl. 277—60 **6 Claims**



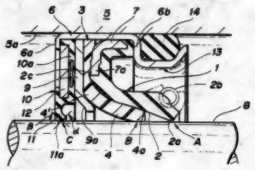
1. In a shaft arrangement including a packing gland for sealing a shaft which extends through said gland so an annular chamber is defined between the inner surface of the gland and the shaft, first compressible packing means provided in said annular chamber, first compression means having an opening to receive said shaft therethrough and an upper surface where said first compression means is provided to compress said first packing longitudinally with respect to said shaft to allow radial expansion of said packing material; a generally cylindrical, longitudinally split second packing gland having first and second halves; connector means connecting said first and second halves of said second packing gland together in relation surrounding said shaft; second packing compression means to receive said shaft means and to be received within said second packing gland, second packing material to be received within said second packing gland to be compressed by said second packing compression means, and fastener means provided to selectively urge said second compression device into the second packing gland housing to compress said second packing against said upper surface of said first compression means to provide a seal between said shaft and said second packing gland.

4,623,153

RADIAL OIL SEAL

Shinji Nagasawa, Fukushima, Japan, assignor to NOK Corporation, Tokyo, Japan

Filed Jan. 27, 1986, Ser. No. 822,803
Claims priority, application Japan, Apr. 16, 1985, 60-56455[U]; May 11, 1985, 60-69837[U]
Int. Cl.[4] F16J *15/32*
U.S. Cl. 277—153 **12 Claims**



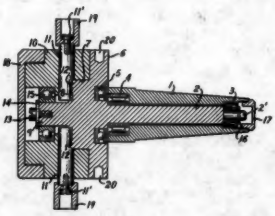
1. A radial oil seal adapted to be disposed between the inner peripheral surface of a bore in a housing and the outer peripheral surface of a rotation shaft inserted into the housing bore for sealing fluid in the housing, the radial oil seal comprising: a first seal ring having a seal lip formed of rubber, the seal lip being in contact at its distal end with the outer peripheral surface of the rotation shaft so as to provide a first sealing part; a second seal ring having a seal lip formed of synthetic resin and disposed at the air side of and adjacent the first seal ring, the synthetic resin seal lip extending along the back face of the rubber seal lip and being in contact at its distal end with the outer peripheral surface of the rotation shaft so as to provide a second sealing part; a reinforcing ring having a substantial rigidity and disposed at the air side of and adjacent the second seal ring, the reinforcing ring being curved along a bent portion of the synthetic resin seal lip so as to support the back face of the bent portion; and an outer ring adapted to be fitted into the inner peripheral surface of the housing bore for firmly holding the radially outer peripheral portions of the first and second seal rings and the reinforcing ring.

4,623,154

CENTER CHUCK ASSEMBLY

Yoji Ise, and Tomeo Konishi, both of Tokyo, Japan, assignors to Tokuken Ltd., Tokyo, Japan

Filed Mar. 28, 1984, Ser. No. 594,362
Claims priority, application Japan, Mar. 29, 1983, 58-45025
Int. Cl.[4] B23B *5/22*
U.S. Cl. 279—1 L **4 Claims**



1. A center chuck assembly for supporting for rotation a cylinder workpiece having an open end and an inner peripheral surface extending inwardly from said open end, said center chuck assembly comprising a mounting pipe adapted to be mounted on a receiving member, a shaft rotatable in said pipe, a flange on an outer end of said shaft, a disc portion on an outer face of said flange, said disc portion having a spiral groove on its outer face, a central hub portion extending beyond said disc portion, said flange, said disc portion and said central hub

portion being integral with said shaft, an annular chuck holding member rotatable on said hub portion and disc portion, said chuck holding member having a plurality of radial holes extending in to said disc portion and hub portion, and a plurality of chuck members radially slidable in said radial holes respectively, said chuck members having outer end portions projecting radially outwardly of said chuck holding member and inner end portions having teeth engaging said spiral groove on the outer face of said disc portion, whereby said chuck members are movable outwardly by rotation of said chuck holding member relative to said disc portion for engagement of said radially projecting outer end portions with the inner peripheral surface of said workpiece at a position spaced inwardly from said open end.

4,623,155

DRILL CHUCK WITH RADIAL JAWS

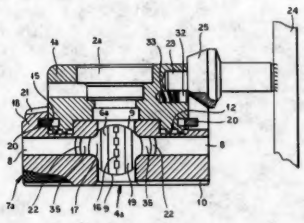
Günter H. Röhm, Heinrich-Röhm-Str. 50, D-7927 Sontheim, Fed. Rep. of Germany

Filed Dec. 5, 1984, Ser. No. 678,343

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1983, 3346440

Int. Cl.⁴ B23B *31/12*

U.S. Cl. 279—19 **10 Claims**



1. In a drill chuck especially for a hammer drill apparatus having a plurality of clamp jaws advanceable toward and retractable away from a chuck drill axis so as to be able to grasp and hold a drill, the improvement wherein:

each of said jaws is advanced into and retracted from a chuck opening in said chuck in a feed channel oriented generally radially with respect to said chuck drill axis and further oriented so that said jaws engage and hold said drill in said chuck opening when advanced in said channels;

each of said feed channels is circumferentially closed at least adjacent said chuck opening and configured so that each of said clamp jaws fits movably, but sufficiently tightly in the respective feed channels so that borings and cuttings cannot penetrate between the surfaces of said channels and said clamp jaws; and

said drill chuck is provided with a plurality of open cleaning passages, each of said cleaning passages connecting the interior wall of said chuck opening adjacent a mouth of one of said feed channels to the outside through said chuck.

4,623,156

OPTICAL FIBER CHUCK

Marc F. Moisson, Los Altos, and Martin L. Wisecarver, Sonora, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 575,615, Jan. 31, 1984, abandoned. This application Sep. 19, 1985, Ser. No. 778,725

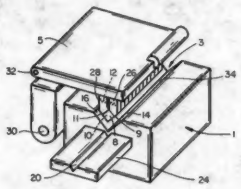
Int. Cl.⁴ B25B *11/02*

U.S. Cl. 279—106 **12 Claims**

1. A chuck for holding an optical fiber in precise position, comprising:

a chuck body having on its upper surface a first straight V-groove into which an optical fiber is loaded;

a chuck cover pivotally mounted on said chuck body between a loading position and an operating position; and



said chuck cover including first and second sets of interleaving fingers which respectively slide along first and second sides of said V-groove towards an apex of said V-groove and urges said loaded optical fiber towards said apex as said chuck cover is moved from its loading position to its operating position.

4,623,157

JAW FOR CHUCKING DEVICES

Hans-Günther Rohs, Rechberghausen, Fed. Rep. of Germany, assignor to Oerlikon-Boehringer GmbH, Goppingen, Fed. Rep. of Germany

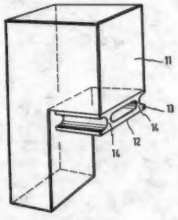
PCT No. PCT/EP83/00233, § 371 Date May 2, 1984, § 102(e) Date May 2, 1984, PCT Pub. No. WO84/01116, PCT Pub. Date Mar. 29, 1984

PCT Filed Sep. 7, 1983, Ser. No. 610,297

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1982, 3233915

Int. Cl.⁴ B23B *31/10*

U.S. Cl. 279—123 **7 Claims**



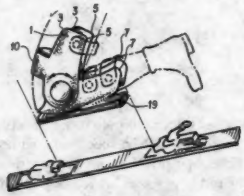
1. A jaw for a radially operative chucking device for a workpiece having a convexly curved surface, comprising: a jaw body; a single jaw plate having a planar surface for contacting the convexly curved surface along one line or narrow strip essentially in the middle of the plate, said jaw plate being hard, but flexible and unsupported under said one line or narrow strip against the jaw body; and two essentially incompressible narrow members arranged between and connected to said jaw body and said jaw plate, and spaced from said line or narrow strip, each narrow member having an axis parallel to said line and perpendicular to the radial, operative direction of the chucking device, whereby said jaw plate upon engagement with the workpiece will bend, but be non-compressed about an axis parallel to said line or narrow strip, so that said line or narrow stip which is in contact with the workpiece will become broader.

4,623,158

SPORTING KNEE BOOT FOR SLIDING, SKATING AND SKIING

F. Javier Monreal, 4242 Barker Hill Rd., Jamesville, N.Y. 13078

Continuation-in-part of Ser. No. 594,367, Mar. 29, 1984, abandoned. This application Sep. 9, 1985, Ser. No. 774,010
Int. Cl.[4] A63C *1/02, 5/00*
U.S. Cl. 280—11.12 3 Claims



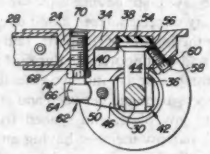
1. A sporting knee boot made of semi-rigid plastic material and having a contoured shell adapted to engulf the user's knee and part of the user's thigh and calf, comprising a first section having a curved bottom portion and upwardly extending side portions, said first section being adapted to receive and support the knee and the upper one third to one half of the user's calf wherein the front of the user's thigh extends through a forward opening of said first section and the user's lower calf extends through a rearward opening of said first section, a second section having a pair of side portions extending from the user's knee to a distance of one third to one half of the height of the user's thigh, said side portions of said second section overlapping said side portions of said first section and being pivotally connected thereto by hinge means, said second section having a curved band for engaging the front of the user's thigh, the ends of said band being connected to the front edges of said side portions of said second section, a spring connected between said first section and said second section wherein said second section is biased for rotational movement in the direction of the user's calf, an adjustable strap secured to the side portions of said second section for engaging the rear of the user's thigh, at least one adjustable strap secured to the side portions of said first section for engaging the rear of the user's calf, and a sole plate secured to the bottom of said first section, said sole plate having a rectangular shape with rounded corners and tapering in thickness from the its rear section to its front section, wherein said sole plate is adapted to be secured to a ski by ski bindings.

4,623,159

ROLLER SKATE

Joseph Grenko, R.R. 3, Box 386, Muscatine, Iowa 52761

Continuation-in-part of Ser. No. 566,012, Dec. 27, 1983, abandoned. This application May 13, 1985, Ser. No. 732,998
Int. Cl.[4] A63C *17/02*
U.S. Cl. 280—11.27 6 Claims



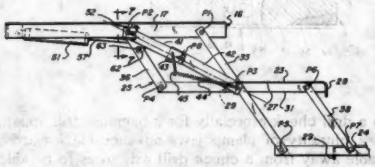
1. A roller skate having a fore-and-aft frame including front and rear shoe-receiving parts respectively carrying front and rear wheeled axles, the improvement to each part comprising a support depending from and rigid with the part and provided with a socket having a closed upper end and an open bottom facing downwardly to the axle, a pedestal disposed between the axle and the socket and having a lower end secured to the axle and a flat top end loosely received in the socket, the pedestal being of fixed height and having its top end spaced below the closed end of the socket, means operative to confine the top end of the pedestal to the socket, a clutching element received in the space between the closed upper end of the socket and the top end of the pedestal, said element being composed of a relatively hard but yieldable material having frictional properties and providing frictional means normally unloaded in the absence of weight on the skate so as to permit relatively free rocking of the pedestal and wheeled axle relative to the frame part about at least a fore-and-aft axis, but frictionally effective as a clutch between the socket and pedestal when the weight of a skater is applied to the skate, said frictional means being releasable upon removal of the skater's weight, a fore-and-aft tongue disposed at about the level of the axle and having one end connected to the axle for rocking relative to the axle and pedestal about a transverse axis and having a terminal end spaced fore and aft from the axle, and adjustment means connected between the terminal end of the tongue and the frame for rocking of the tongue relative to the axle and pedestal about the aforesaid transverse axis.

4,623,160

EXTENSIBLE STEP ASSEMBLY FOR VEHICLES

Jerry W. Trudell, 1027 Alpine Rd., P.O. Box 302, Montrose, Colo. 81401

Filed Sep. 6, 1985, Ser. No. 773,043
Int. Cl.[4] B60R *3/02*
U.S. Cl. 280—166 14 Claims



1. An extensible step for a vehicle comprising:

a frame mounted to said vehicle;

at least one step connected to said frame by a pair of side linkage assemblies for movement of said step between a retracted position for storage, and an extended position for use,

each linkage assembly including a front linkage bar pivotally connected to said frame at a first pivot rearwardly of the forward end of said frame and a rear linkage bar pivotally connected to said frame at a second pivot rearwardly of said first pivot,

said step being pivotally connected to said front linkage bar at a third pivot and to said rear linkage bar at a fourth pivot to form a parallelogram structure having said linkage bars opposite one another and said frame and step opposite one another with said linkage bars extending forwardly at a substantial angle from the vertical in the extended position to locate the forward end of said step beyond the forward end of said frame a greater distance than the maximum vertical distance between the step and first pivot and to locate the forward end of said step rearwardly of the forward end of said frame with said step being folded under said frame in the retracted positon, said first pivot being located rearwardly of the side of the vehicle and said step beyond the side of the vehicle in the extended position,

locking means coupled to said linkage assemblies to lock said linkage assemblies in the extended position; and

power-actuated drive means coupled to said linkage assem-

blies to release said locking means and to move said step between retracted and extended positions;

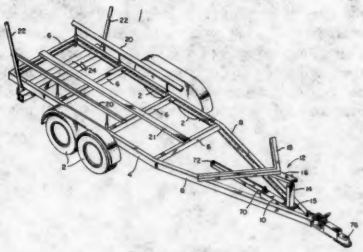
said drive means including a source of motive power and a drive shaft rotated in either direction by said source of motive power, said drive shaft having first means engaging said locking means to release said locking means when said shaft is rotated in one direction and second means engaging said linkage assemblies to positively drive said linkage assemblies to the extended position when said drive shaft is rotated in one direction and to positively drive said linkage assemblies to the retracted position when said shaft is rotated in the opposite direction.

4,623,161

BOAT TRAILER

Wendell Sprague, Mercer Island, Wash., assignor to Mobi-Dock, Inc., Mercer Island, Wash.

Filed Jan. 18, 1985, Ser. No. 692,834
Int. Cl.[4] B60P *3/10*
U.S. Cl. 280—414.1 **8 Claims**



1. A boat trailer adapted to simplify the launching and loading of a boat comprising:

a main frame member including infinitely adjustable bunk means to support the boat;

extendible tongue means to allow the trailer to be further from the vehicle during launching and loading;

latch means whereby the boat may be powered into position over the submerged trailer and then automatically securely latched in place, and further the trailer may be backed into the water with the latch secured, and the boat powered forwardly causing the latch to release, freeing the boat;

dolphins movable from a stored position beneath the trailer for travel to an operative position to guide the boat onto the trailer, said dolphins angled upwardly and outwardly with respect to the trailer frame, said dolphins being of a sufficient length to extend above the waterline when the trailer is deep enough for the boat to float free.

4,623,162

DUAL TRAILING ARM VEHICLE SUSPENSION SYSTEM

David A. Weitzenhof, Bath, and Charles F. Sayre, Akron, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Oct. 29, 1984, Ser. No. 665,481
Int. Cl.[4] B60G *19/00*
U.S. Cl. 280—687 **17 Claims**

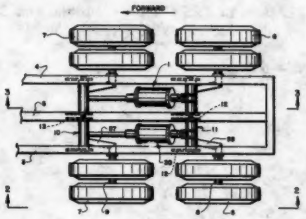
1. A vehicle suspension system adapted to be interposed between a vehicle frame and at least two wheels arranged one in advance of the other on a side of said vehicle frame; said suspension system including:

(a) at least two axles on a side of said vehicle frame for independently rotatably mounting each of said wheels;

(b) at least two trailing arms, each of said arms being attached at one end to a respective axle and extending forwardly from the axle wherein the number of said trailing arms does not exceed the number of axles;

(c) at least two pivot means mounted on said vehicle frame and connected to the other end of said trailing arms for pivotally mounting said vehicle frame wherein the number of said pivot means does not exceed the number of axles;

(d) lever means attached to and extending outwardly from



each of said pivot means for pivotal movement with said pivot means means in relationship to movement of said trailing arms, with the length of said lever means being independent of the spacing between said axles; and

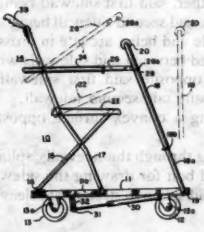
(e) elastomer spring means extending between and pivotally mounted on said lever means for absorbing and balancing the forces exerted on said wheels particularly during braking and when encountering variations in the road surface.

4,623,163

TRAVEL CHAIR FOR HANDICAPPED INDIVIDUALS

Vinson S. Potts, 20 Cunningham Pl., Cherry Hill, N.J. 08003

Filed Nov. 8, 1985, Ser. No. 796,637
Int. Cl.[4] B62B *11/00*
U.S. Cl. 280—649 **7 Claims**



1. A collapsible travel chair for handicapped individuals that is easily removable from an automobile and can be unfolded without requiring adjustment for the user, said travel chair comprising a wheeled base having front and rear wheels, said front wheels being carried by brackets pivotally mounted on said wheeled base for rotation about horizontal and vertical axes and said rear wheels being mounted for rotation about a horizontal axis, a folding chair pivotally attached to said base, a pivoting front rail mounted on said base located in front of said folding chair and extending upwardly from said base, pivoting side rails extending horizontally from said chair into latching engagement with said front rail when said chair is in an upright position, said front rail being pivotable from a rearwardly angled position while being in latching engagement with said side rails to a vertical position and said side rails being pivotable away from the front rail for permitting the user to enter and exit the chair from either side, and a brake mechanism connected to and operable by said front rail for preventing rotation of said wheels and turning of at least one of said

front wheels about a vertical axis when said front rail is in said vertical position, said front wheels being freed for turning about a vertical axis and said rear wheels for rotation when said front rail is moved back to said rearward position for latching engagement with said side rails.

4,623,164

BAND CLAMP FOR AXLE ASSEMBLY AND THE LIKE

Thomas R. Cassel, and Scott T. Cassel, both of Birmingham, Mich., assignors to BKS Company, Birmingham, Mich.

Filed Dec. 11, 1984, Ser. No. 680,735

Int. Cl.[4] F16L *13/14, 21/06*

U.S. Cl. 280—689 **9 Claims**

7. In combination with a vehicle cross-beam axle of the type having a cross-section of triangular shape, a stabilizer bar disposed within the confines of said axle and a retainer disposed between the axle and the stabilizer bar and having a surface segment extending across the open side of said axle,

a band clamp having a preformed band including a sleeve portion and a channel portion,

said sleeve portion having a cross-sectional configuration of triangular shape.

said channel portion comprising first and second sidewalls extending in substantially the same direction as one side of the sleeve portion and terminating in free ends separated from each other, said first sidewall being an extension of said one side, said second sidewall being an extension of an adjoining side and being arcuate in cross-section,

a spline disposed between said sidewalls with a substantially flat surface opposite said first sidewall and a concave surface opposite said second sidewall,

a spacer having a convex surface opposite said concave surface,

a bolt extending through the sidewalls, spline and spacer and a nut on said bolt for drawing the sidewalls into engagement with said spline to stretch said sleeve portion around said axle.

4,623,165

AIR LIFT AXLE

Richard E. Timmers, 11425 University Dr., Coral Sand Estates, Apache Junction, Mesa, Ariz. 85220

Filed Mar. 26, 1985, Ser. No. 716,028

Int. Cl.[4] B60G *11/26*

U.S. Cl. 280—704 **1 Claim**

1. A device for stabilizing a motor home vehicle by increasing the number of tires in contact with a road surface, comprising:

(a) a mounting assembly, the mounting assembly being affixed to the vehicle, the mounting assembly including a pair of brackets, each bracket including a mounting plate to which is rigidly attached a hollow tube, the mounting of each bracket containing a plurality of holes through which a fastener may be placed in order to affix the mounting plate to the vehicle;

(b) a solid rod, the solid rod having a longitudinal axis, the solid rod being rigidly attached to the mounting assembly within the hollow tubes of the brackets by means of set screws passing through the hollow tubes;

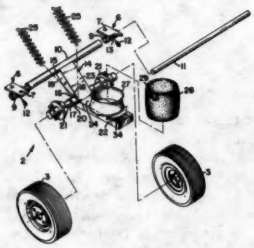
(c) a hollow bar, the hollow bar having a longitudinal axis parallel to the longitudinal axis of the solid rod, the hollow bar encompassing the solid rod such that the hollow bar may rotate about the longitudinal axis of the solid rod, the hollow bar being pivotably mounted to the vehicle by means of the solid bar passing sequentially through the hollow tube of one of the pair of brackets, the hollow bar, and the hollow tube of the remaining bracket;

(d) a box girder, the box girder being rigidly affixed to the hollow bar, the box girder having a longitudinal axis that is substantially perpendicular to the longitudinal axis of the hollow bar, the box girder having a first end and a second end, the first end being formed as a concave surface so as to encompass the hollow bar to which the box girder is rigidly attached;

(e) an axle, the axle passing transversely through the box girder and being mounted thereto such that the axle may freely rotate, the box girder including bearings, the bearings being mounted adjacent to the second end of the box girder so as to support the axle;

(f) a plurality of tires, the tires being attached to the axle;

(g) a spar, the spar being rigidly attached to the axle, the spar having a longitudinal axis, the spar being rigidly attached to the second end of the box girder, the longitudinal axis of the box girder intersecting the longitudinal axis of the spar at an angle which is greater than 90° and less than 180°;



(h) an inflatable bladder, the bladder residing between the spar and the vehicle such that when the bladder is inflated, the hollow bar is caused to pivot about the solid rod such that the tires are forcibly pressed into contact with the road surface;

(i) a plurality of springs, each spring having a first end and a second end, the first end being attached to the vehicle and the second end being attached to the second end of the box girder such that the spring urges the spar toward the vehicle;

(j) a canister, the canister having a base, the canister having an open top, the canister being rigidly mounted to the spar so as to house and support the inflatable bladder, the inflatable bladder being fully contained within the canister when the bladder is deflated, the bladder having a circular platform, the canister having a continuous sidewall, the sidewall sloping inwardly from the base to a point near the open top, the sidewall sloping outwardly from the point until reaching the open top of the canister;

(k) a shim, the shim being rigidly affixed between the spar and the canister so as to tiltably align the canister, the canister being aligned such that a force exerted by the bladder against the spar has a substantial component normal to a plane defined by the road surface;

(l) a pressure vessel, the pressure vessel being interconnected with the inflatable bladder so as to inflate the bladder;

(m) a compressor, the compressor being interconnected with

the pressure vessel so as to maintain a supply of pressurized air to the pressure vessel;

(n) a control valve regulator, the control valve regulator being interconnected with the inflatable bladder so as to permit inflation and deflation of the bladder.

4,623,166

HEAD RESTRAINT IN A MOTOR CAR

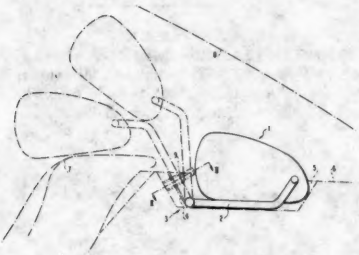
Rudolf Andres, Sindelfingen; Wolfgang Fussnegger, Herrenberg; Helmut Grantz, and Werner Heiss, both of Sindelfingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Sep. 10, 1984, Ser. No. 649,181

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1983, 3332730

Int. Cl.[4] B60R *21/10*

U.S. Cl. 280—751 **10 Claims**



10. A head restraint apparatus for a vehicle, wherein a head restraint is supported by means of at least one bearing arm engaging a solid part of the vehicle and which, together with the at least one bearing arm, can be transferred from an in-use position into a stowage position in which the head restraint is received by a hollow member in the rear window shelf, comprising an inside wall means of the hollow member serving as a solid part of the vehicle for supporting the at least one bearing arm, and means for pivoting the head restraint before, during or after conclusion of a swinging operation, in the opposite direction to the wing of the at least one bearing arm,

a power-assisted means comprising a pneumatic spring means for assisting swinging movement of the head restraint,

when the not-in-use position of the head restraint is reached, the pneumatic spring means assumes a beyond-dead-center position and

remote control means for controlling the position of the pneumatic spring means.

4,623,167

VEHICLE FRAME CONSTRUCTION FOR BUGGIES WITH RIDING SADDLES

Shinji Matsubayashi, Tokyo; Tsuneo Kajikawa, and Shokichi Arai, both of Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 13, 1984, Ser. No. 650,028

Claims priority, application Japan, Sep. 13, 1983, 58-168856

Int. Cl.[4] B62D *21/00*

U.S. Cl. 280—798 **6 Claims**

1. A vehicle frame construction in a buggy with a riding saddle, comprising:

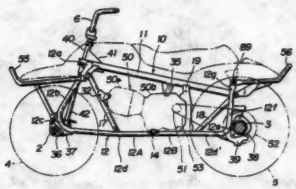
(a) a main frame extending longitudinally along a central axis of the buggy, said main frame having front and rear ends;

(b) a pair of down tubes disposed one on each side of said main frame and having one ends fixed to sides of said front end of said main frame and opposite ends fixed to sides of said rear end of said main frame;

(c) each of said down tubes being composed of a downwardly directed portion extending downwardly from said front end of said main frame and in a forward direction of the buggy, a horizontal portion extending substantially horizontally from said downwardly directed portion in a rearward direction of said buggy, and an upwardly directed portion extending substantially vertically upwardly from said horizontal portion to said rear end of said main frame;

(d) each of said down tubes including a curved portion between said downwardly directed portion and said horizontal portion, said downwardly directed portion and said horizontal portion having axes extending at an acute angle with respect to each other;

(e) a first reinforcement pipe detachably coupled between said downwardly directed portion and said horizontal portion of each of said down tubes;



(f) a cross pipe extending transversely of said buggy and interconnecting said horizontal portions of the down tubes, said first reinforcement pipe being coupled to said horizontal portions through said cross pipe;

(g) a pair of mutually confronting gusset plates joined between said one ends of said down tubes and said sides of said front end of said main frame, a pair of brackets mounted on a substantially central upper surface of said cross pipe and having confronting surfaces, said first reinforcement pipe having one end coupled between said gusset plates and an opposite end coupled between said brackets; and

(h) short pipes extending transversely of said buggy and connected respectively to said one and opposite ends of said first reinforcement pipe, said short pipes being fastened to said gusset plates and said brackets by bolts extending through said short pipes.

4,623,168

AUTOMATIC SEAT BELT SYSTEM

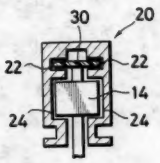
Yoshihiro Yokote, Yokohama, Japan, assignor to NSK-Warner K.K., Japan

Filed Oct. 22, 1984, Ser. No. 663,157

Claims priority, application Japan, Nov. 2, 1983, 58-170346[U]

Int. Cl.[4] B60R *21/10*

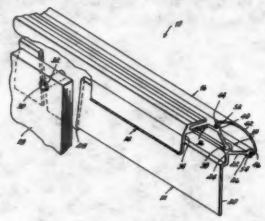
U.S. Cl. 280—804 **4 Claims**



1. In an automatic seat belt system including a guide rail to be arranged along a predetermined path within the room of an automobile, a runner provided movably on the guide rail, and a drive member for causing the runner to move, while being guided by the guide rail, in such a way that a webbing fastened

to the runner is displaceable between an occupant restraining position and an occupant non-restraining position, the improvement wherein the drive member is formed of an oriented polyamide tape made of a polyamide resin.

4,623,169
CLAMP
James E. Hutten, Mason, Ohio, assignor to Ghent Manufacturing Inc., Lebanon, Ohio
Filed Jun. 13, 1985, Ser. No. 744,393
Int. Cl.[4] B42D *17/00, 5/00*; B42F *9/00*
U.S. Cl. 281—45 **10 Claims**



1. Apparatus for clamping an object such as a paper pad or the like comprising:

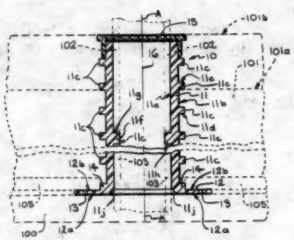
a back support;

a clamping member pivotally mounted to said back support, said clamping member being pivotal with respect to said back support between an open position and a closed position;

said clamping member being spaced from said back support in said open position for receiving an object therebetween, the object being clamped against said back support upon pivoting said clamping member to said closed position;

an extruded aluminum spring connected between said back support and said clamping member, said extruded aluminum spring locking said clamping member relative to said back support in said open position and in said closed position.

4,623,170
COUPLING
Kenneth R. Cornwall, 717 Miami Cir., Atlanta, Ga. 30324
Filed Jun. 2, 1983, Ser. No. 500,538
Int. Cl.[4] F16L *35/00*
U.S. Cl. 285—4 **14 Claims**



1. A plastic coupling having spaced apart parallel cylindrical inside and outside walls which coupling is adapted to be embedded in a concrete floor and to be bonded to plastic pipe and to be at least temporarily supported by a form for pouring the concrete floor which comprises:

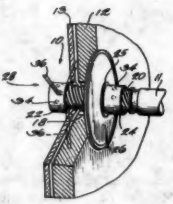
(a) a tube having an inside cylindrical wall adapted to be bonded to the plastic pipe defining a cylindrical longitudinal axis, a cylindrical outside wall and opposing ends between the walls;

(b) attachment means at one end of the tube for securing the coupling to the form using connection means;

(c) a series of equally spaced apart concentric rings on the outside wall of the tube each with two spaced parallel sides perpendicular to the axis and an annular side parallel to the axis, wherein the series of rings are located between the ends of the tube, wherein the rings are at predetermined heights relative to the attachment means so that the coupling can be severed at any predetermined height adjacent one ring and then the tube fitted with a cap which fits on an opposing end of the tube when severed at the predetermined height for pouring the concrete floor to the height of the cap; and

(d) a step on the outside wall of the tube adjacent to the attachment means which can be used with a positioning template to be layed on the form prior to pouring the concrete for positioning the coupling.

4,623,171
NO-MORTAR FLASHING METHOD AND APPARATUS
James H. Wilson, 7225 W. Marine Dr., Milwaukee, Wis. 53223
Filed Feb. 13, 1984, Ser. No. 579,364
Int. Cl.[4] F16L *41/08*
U.S. Cl. 285—42 **5 Claims**



1. A vent pipe extension and flashing apparatus for extending a vent pipe through an opening in a wall having an interior surface and an exterior surface, the apparatus comprising

a threaded sheet metal pipe including an outer surface, opposite first and second ends, said first end being adapted to extend through the opening in the wall, and said second end being adapted to be connected to a vent pipe,

restraining means for engaging the interior surface of the wall to prevent said threaded pipe from being pulled back through the opening, said restraining means being supported by said first end of said threaded pipe and being compressible to allow said first end of said threaded pipe to be pushed through the opening in the wall, said restraining means including a first collar adapted to be threaded onto said first end of said threaded pipe, and a plurality of restraining members supported by said first collar and adapted to extend radially outwardly from said first collar, said restraining members being flexible between a first position wherein said restraining members and said first collar threaded onto said first end of said threaded pipe can be pushed through the opening in the wall, and a second position wherein said restraining members extend radially outwardly from said collar to engage the interior surface of the wall when said first collar and said first end have been pushed through the opening to restrain said first collar and said threaded pipe from being pulled back through the opening, and

means for surrounding said second end of said threaded sheet metal pipe and engaging the exterior surface of the wall to cover the opening, said surrounding means including a member adapted to be threaded onto said second end of said threaded pipe, said means for surrounding including a flange adapted to surround said threaded pipe adja-

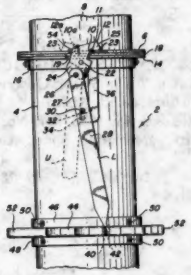
cent to said second end and adapted to cover the opening and to engage the exterior surface of the wall, said flange being slideably movable along the length of said pipe, and wherein said member adapted to be threaded onto said second end of said threaded pipe comprises a collar adapted to be threaded onto said second end of said threaded pipe and adapted to engage said flange for forcing said flange against the exterior surface of the wall.

4,623,172

PIPE COUPLING

Thomas E. Shepheard, Norfolk, Va., assignor to Air-A-Plane Corporation, Norfolk, Va.

Filed May 2, 1985, Ser. No. 729,735
Int. Cl.[4] F16L *37/00*
U.S. Cl. 285—309 **6 Claims**



1. A coupling for connecting an end of a tube to an apertured plate, comprising

a pair of slot means through the plate on respectively opposite sides of the aperture,

a tube,

a first pair of levers of the first class on respectively opposite sides of the tube and having resistance ends with hooks thereon extending through the slots in the plate,

said first pair of levers being pivoted to said tube for swinging movement about axes disposed radially of the tube between locked positions in which the hooks engage over the plate at ends of the slots and an unlocked position in which the hooks are free from the plate at the slot ends,

a second pair of levers of the first class being pivotal by means on said opposite sides of the tube for swinging about axes extending radially of the tube, said second pair of levers having resistance ends pivoted to force ends of the first pair of levers,

and means connected to force ends of the second pair of levers for simultaneously swinging the same about their pivotal axes between opposite extreme positions whereby to swing the first pair of levers between their locked and unlocked positions,

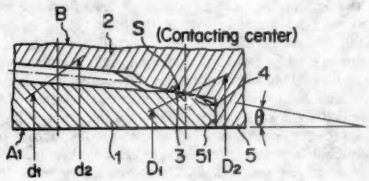
the pivotal means each comprising a link having one end supported by a pivot fixed with respect to the tube and another end pivotally supporting one of the second pair of levers for swinging about a shifting pivotal axis and constituting a toggle.

4,623,173

SCREW JOINT COUPLING FOR OIL PIPES

Masao Handa; Mikio Ueki; Tomohiko Tokuya, all of Yokohama; Mitsuaki Hori, Kamakura; Hidenori Yasuoka, Kawasaki; Toshio Sato; Takuzo Ichihara, both of Tokyo, and Kenichi Toyama, Yokohama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 5, 1984, Ser. No. 647,677
Claims priority, application Japan, Jun. 20, 1984, 59-125346
Int. Cl.[4] F16L *15/00*
U.S. Cl. 285—333 **6 Claims**



1. A screw joint coupling for oil pipes, wherein a main sealing portion is provided with a sealing portion which is axially convex at an end of a male screw, and with a sealing portion which is tapered at an inner side of a female screw, and an end point of the male screw butting an end part of a stopper formed at the inner side of the female screw, and composing parts of the joint coupling being constructed under the following conditions:

(i) a screw portion is provided with a shrinkage allowance Δd, and a load flank angle of the scew portion is between 0° to 1.1°;

(ii) a convex surface in an axial direction of the sealing portion of the male screw is formed with a radius of curvature of more than 100 mm, and a tapering angle of the sealing portion of the female screw is between 1.0° to 4.7°;

(iii) an outer diameter D1 of the sealing portion of the male screw and an inner diameter D2 of the sealing portion of the female screw are made so that $D1 > D2$, to which a shrinkage allowance ΔD of the sealing portion is formed such that pressure P of the sealing part is (inner pressure applied to the screw joint coupling) $< P <$ (yield strength of the sealing portion of the screw joint coupling); and

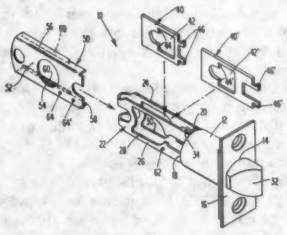
(iv) the relation between the seal shrinkage allowance ΔD and the screw shrinkage allowace Δd is set $\Delta D \geqq \Delta d$.

4,623,174

LATCHBOLT WITH ADJUSTABLE BACKSET

Jeffrey G. Trull, Matthews, and Sidney J. Lampley, Monroe, both of N.C., assignors to Yale Security Inc., Charlotte, N.C.

Filed Feb. 26, 1985, Ser. No. 705,792
Int. Cl.[4] E05B *9/10*
U.S. Cl. 292—1 **6 Claims**



1. A door latch having an adjustable backset comprising a

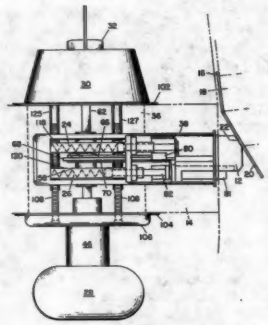
tubular latchcase having an open end surrounded by a face plate, the other end being partly closed except for a rectangular aperture and having a latchcase tail comprising a U-shaped element both legs of which are flat and secured to the latchcase on the sides, respectively, of the aperture, a latchbolt in the latchcase and extending out through the open end of the latchcase, a latchbolt operator associated with the latchbolt and extending out of the aperture, the operator being aligned parallel to and against one of the legs, the operator terminating in a pair of spaced ends with opposed fingers, directed inwardly toward the longitudinal center line of the tail, a backset inset comprising a plate having at its operator-engaging end recesses, also inwardly directed, adapted to receive the inwardly directed fingers, the inset having at a preset distance from the fingers pullback shoulder means, the inset fitting in the latchcase tail against the said one leg, and coplanar with the operator, and an elongate slide of C-shaped cross-section adapted to slide along said leg to hold the inset thereagainst, an inside wall of said slide being received between the legs of the U-shaped element adjacent said inset to retain said fingers in engagement with said recesses, the slide being apertured to permit passage of a pullback, whereby the assembly can be taken apart and the inset disengaged and replaced with an inset with a different preset distance.

4,623,175

HIGH SECURITY DOOR LATCH AND DEADBOLT

Charles Carroll, 1301 20th St. NW. #503, Washington, D.C. 20036

Filed Nov. 10, 1983, Ser. No. 550,745
Int. Cl.[4] E05C *1/16*
U.S. Cl. 292—40 **13 Claims**



1. A combined deadbolt and longlatch assembly for providing deadbolt security for normal use with standard pre-cut external doors having a transverse opening substantially 2¼ inches in diameter located substantially 2⅜ inches from the edge of the door, comprising:

a longlatch;

a striker plate having a flat portion with an opening to receive said longlatch, and an extended depressor means oriented at a substantial angle with respect to said flat portion for moving said longlatch to its retracted position as the door is closed;

means including a cylinder closely enclosing and guiding said longlatch for mounting said longlatch in a standard pre-cut door, for movement of one inch or more from the outer edge of the door toward said strikers plate which is to be mounted on a door frame;

said cylinder having a length greater than 2⅜ inches and slightly less than 3-7/16 inches to extend substantially from the edge of the door not only through the smaller standard hole in pre-cut doors which extends from the edge of the door, but also through substantially more than half of the larger transverse opening in pre-cut doors to provide the desired support and operating space for the extended travel of the longlatch and associated operating mechanism;

spring means mounted within said operating space and extending toward said longlatch from a point substantially beyond the center of the said larger transverse opening and away from the edge of the door, for normally biasing said longlatch to the fully extended position;

said depressor means on said striker plate extending to a distance in the order of one inch away from the plane of said flat portion thereof;

means including a knob for mounting on at least one side of the door for substantial alignment with the center of the transverse opening for retracting said longlatch the full one inch extension thereof from said striker plate;

means including (1) a deadlocking plunger mounted adjacent to said longlatch for movement substantially parallel to said longlatch and (2) mechanical linkage means between said deadlocking plunger and said longlatch, to detent the longlatch when the longlatch is in its extended position and the deadlocking plunger is in its retracted position, and to release said longlatch when said deadlocking plunger is in its extended position;

said longlatch being provided with a bevel on at least one side thereof to engage said striker plate; and

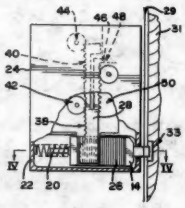
means within said assembly for preventing forward travel of said deadlocking plunger beyond the point along said longlatch where said bevel starts.

4,623,176

FASTENING DEVICE

Anthony R. Clausen, 7 Klip Street, Observatory, Johannesburg, Transvaal Province, South Africa

Filed Sep. 19, 1983, Ser. No. 533,737
Claims priority, application South Africa, Sep. 21, 1982, 82/6926
Int. Cl.[4] E05C *19/02*
U.S. Cl. 292—74 **18 Claims**



1. A fastening device for a door for a cupboard or the like, which includes

a support member securable to the door at a suitable desired position;

a stop means that is adjustably mounted on the support member and comprises a stop member and a displacement limiting means fast with the stop member;

a catch member which is mounted on the stop member to be displaceable with respect thereto between an extended position in which it extends past the support member to be engageable with the jamb of the door, and a retracted position in which it does not thus extend past the support member, the extent of its displacement from the stop member being limited by the displacement limiting means;

a first bias means carried by the stop member for biassing the catch member from the stop member towards its extended position; and

a restraining member that is mounted on the support member to be displaceable between a restraining position in which it engages the stop means and restrains displacement

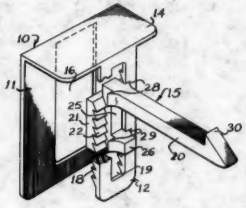
thereof with respect to the support member, and a non-restraining position in which the stop means and the catch member are displaceable together, the restraining member being engageable via an opening in the door by an operating tool from outside the device, and whereby the restraining member is displaceable into restraining engagement with the stop means when it is in a desired position with the catch member projecting beyond the support member a desired extend when it is at the limit of its displacement from the stop member.

4,623,177

ADJUSTABLE SAFETY LATCH

James C. McKinney, 8850 N. Mount Dr., Alpharetta, Ga. 30201

Filed Jan. 29, 1985, Ser. No. 696,076
Int. Cl.[4] E05C *19/06*
U.S. Cl. 292—87 **9 Claims**



1. A safety latch for preventing access to a cabinet or the like by preventing full opening of a closure for said cabinet, said safety latch including a mounting bracket receivable on the moveable edge of said closure, and a hook assembly carried by said mounting bracket, said hook assembly including a base plate selectively engageable with said mounting bracket, ratchet means for allowing said base plate to be moved in one direction relative to said mounting bracket while restraining motion in the opposite direction, a hook member extending generally perpendicularly from said base plate for engaging said cabinet, said hook member being sufficiently resilient to be forcefully bent for disengagement from said cabinet, said mounting bracket including an outer flange for engagement with the outer surface of said closure, an inner flange in a plane parallel to said outer flange, and an end member connecting said outer flange and said inner flange, said end member engaging said moveable edge of said closure.

4,623,178

LOCK ASSEMBLY

Arthur V. Geringer, 4611 Deseret Dr., Woodland Hills, Calif. 91364; Richard G. Geringer, 28834 Barragan St., and David A. Geringer, 5382 Cheseboro Rd., both of Agoura, Calif.

Filed Oct. 21, 1985, Ser. No. 789,946
Int. Cl.[4] E05C *1/16*
U.S. Cl. 292—173 **5 Claims**

1. An improved entry closure assembly, said assembly comprising, in combination:

(a) a door frame,

(b) a donor secured to said frame for movement between an open and closed position,

(c) a door locking and unlocking assembly disposed in said door and door frame, said assembly including

(1) a door sub-assembly secured to said door and having

(i) a latch member having camming means,

(ii) a door handle hub,

(iii) a door handle hub locking mechanism operatively connected to said hub,

(iv) latch actuator means interconnecting said hub and latch member,

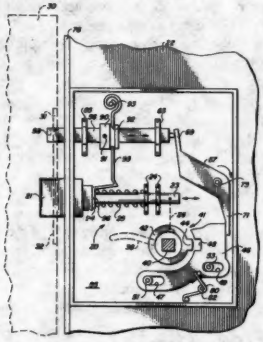
(v) an actuator member,

(vi) locking means interconnecting said actuator member and locking mechanism, and

(vii) interconnection means for connecting said latch member and actuator member to cause simultaneous retraction of said latch member and actuator member, and

(2) a frame sub-assembly secured to said door frame and having

(i) a strike plate having first and second openings therein,



(ii) said door frame having a recess therein disposed opposite said first opening which is adapted to receive said latch member, and

(iii) said door frame also having an opening therein disposed opposite said second opening which is adapted to receive said actuator member,

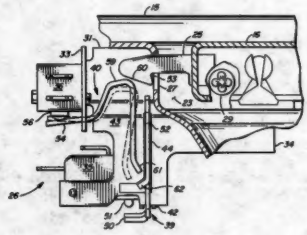
(3) whereby closure of said door causes said camming means to interact with said strike plate to move the latch member into the door sub-assembly thereby causing simultaneous movement of the actuator member into the door sub-assembly due to the presence of said interconnection means.

4,623,179

DOOR LATCH FOR APPLIANCE

G. Jerry Davis, and John C. Mellinger, both of Newton, Iowa, assignors to The Maytag Company, Newton, Iowa

Continuation of Ser. No. 565,638, Dec. 27, 1983, abandoned. This application Mar. 10, 1986, Ser. No. 838,412
Int. Cl.[4] E05C *3/06, 5/04*
U.S. Cl. 292—201 **7 Claims**



1. An appliance including an access door and latching apparatus therefor, the combination comprising: operating means disposed within said appliance, said access door controlling access to said operating means and movable between an access-open and an access-closed position; an electrical power source for providing electrical power between a pair of electrical

conductors to power said appliance; microcontroller-based program means for controlling operation of said appliance and said latching apparatus; a catch mounted on said movable access door; means for mounting said latching appatatus on said appliance generally adjacent said catch when said movable access door is in the access-closed position; locking means including a lever member and engageable with said catch when said access door is in a closed and lockable posture; electrically energizable actuating means operatively attached to said lever member for movement thereof between a catch-unlocked first mode and a catch-locking second mode; switch means actuated by said lever member upon movement of said lever member to said catch-locking second mode, said locking means being operable for engagement with said catch to sense the proper positioning of said access door and operable for preventing energization of said actuating means when said access door is not in a closed and lockable posture and for preventing movement of the access door when said access door is properly located in said access-closed position, said lever member while moving into engagement with said catch being substantially concurrently operable for actuating said switch means from a door-unlocked first posture to a door-locked second posture to provide a signal to said microcontroller-based program means indicating that said access door is closed and locked, and monitoring means included in said microcontroller-based program means for sensing the posture of said switch means and the mode of said actuating means, said microcontroller-based program means including means for preventing operation of said appliance upon sensing said switch means in said door-locked second posture while sensing said actuating means in said catch-unlocked first mode whereby energization of said actuating means is allowed only if said access door is closed and lockable and operation of said appliance is allowed only if said access door is closed and locked.

4,623,180

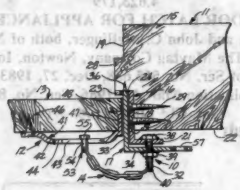
CHAIN DOOR LOCK

Harold L. Zimmerly, 6047 N. Muscatel, San Gabriel, Calif. 91775

Continuation-in-part of Ser. No. 658,037, Oct. 5, 1984, abandoned. This application Mar. 15, 1985, Ser. No. 712,248

Int. Cl.[4] E05C *17/36*

U.S. Cl. 292—264 **24 Claims**



1. A door lock comprising:

a wall bracket comprising:

a generally L-shapd mounting plate having a first section comprising front and rear edges and at least one screw hole and a second section extending from the rear edge of the first section generally normal to the first section, said mounting plate being mountable on a door jamb by means of at least one screw which can be inserted through a screw hole in the first section and into the door jamb;

a generally L-shaped cover plate having a first section comprising front and rear edges and a second section extending from the rear edge of the first section generally normal to the first section, said cover plate mountable over the mounting plate for blocking access to screws extending through the first section of the mounting plate and into the door jamb;

means for releasably securing the cover plate to the mounting plate;

a door bracket fixedly mountable on a door; and

connecting means for connecting the wall bracket to the door bracket, said connecting means being fixedly attached to one of the door brackets or the second section of the mounting plate of the wall bracket and releasably attachable to the other of the door bracket or the second seciton of the mounting plate of the wall bracket.

4,623,181

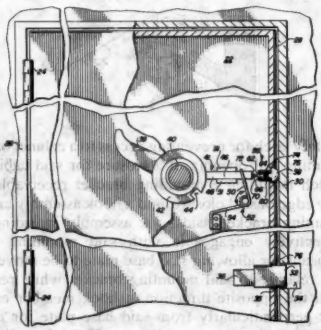
ENTRY CLOSURE ASSEMBLY

Arthur V. Geringer, 4611 Deseret Dr., Woodland Hills, Calif. 91364; Richard G. Geringer, 28834 Barragan St., and David A. Geringer, 5382 Cheseboro Rd., both of Agoura, Calif.

Filed May 6, 1985, Ser. No. 730,569

Int. Cl.[4] E05C *1/16*

U.S. Cl. 292—336.3 **14 Claims**



1. An improved entry closure assembly, said assembly comprising, in combination:

(a) a door frame including a door jamb disposed in an entry way;

(b) a door secured to said frame for movement between open and closed entry way positions;

(c) primary door opening and closing means disposed in said door and said door jamb;

(d) a door handle hub rotatably secured to said door and operatively connected to said door opening and closing means; and,

(e) door handle hub locking means comprising

(i) a locking plate secured around said door handle hub in said door, said plate defining a slide bolt-receiving recess in the outer periphery thereof,

(ii) an elongated slide bolt adapted to be received in said recess and disposed in said door between said door handle hub and the portion of said door jamb adjacent to said hub,

(iii) support means in said door connected to said slide bolt for holding said slide bolt and permitting movement of said slide bolt between a first unlocked hub position, in which position said bolt lies outside said recess in said plate, and a second handle hub-locking position, in which latter position said bolt lies inside said recess in said plate, and,

(iiii) biasing means in said door connected to said slide bolt for biasing said slide bolt into said locked and said unlocked positions.

4,623,182

BUMPER FOR VEHICLE, ESPECIALLY MOTOR VEHICLES, AND METHOD OF MANUFACTURE

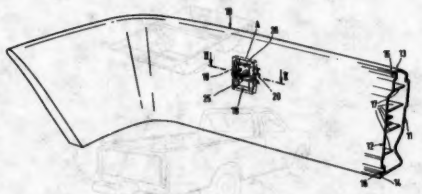
Hans-Gerhard Trabert, and Claus P. Scharf, both of Rüsselsheim, Fed. Rep. of Germany, assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 14, 1985, Ser. No. 691,059

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1984, 3402456

Int. Cl.[4] B60R *19/24, 19/03, 19/04*

U.S. Cl. 293—155 3 Claims



1. A bumper assembly for an automotive vehicle comprising an elongated impact shell having outer and inner faces spaced from and connected to one another by top and bottom walls, said inner face having a window therethrough having differing and predetermined height and width dimensions, said window being bounded by wall means extending into said shell, a fastener assembly for attaching said shell to a vehicle, said fastener having a main body and a threaded fastener extending therefrom, said main body having predetermined height and width dimensions less than the respective height and width dimensions of said aperture to permit said main body to be aligned with and axially inserted through said window into said shell and turned through a predetermined arc, a pair of opposing resilient fingers extending rearwardly from said inner face into said shell beyond the extent of said wall means, each of said fingers having a locking surface spaced a predetermined distance from the back surface of said wall means, and keeper means formed on opposite ends of said main body for engaging said locking surfaces to hold said main body against said wall means and releasably retain said fastener assembly on said shell.

4,623,183

ROBOT HAND

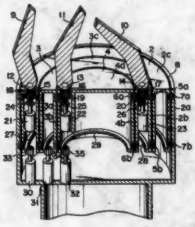
Koukichi Aomori, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 25, 1984, Ser. No. 654,028

Claims priority, application Japan, Sep. 30, 1983, 58-182755

Int. Cl.[4] B66C *1/10*

U.S. Cl. 294—86.4 8 Claims



1. A robot hand attached to the distal end of a robot arm, comprising:

a main body fixed to the arm;

a plurality of fingers;

supporting means attached to the main body and rockably supporting at least one of the fingers;

first driving means for rocking the fingers; and

second driving means for rotating at least one of said supporting means to change the relative angles between the fingers, wherein said main body includes an outer casing, and said supporting means comprise a plurality of rotating members coaxially disposed in the outer casing for relative rotation and each said rotating member rockably supports the proximal end portion of one of the fingers.

4,623,184

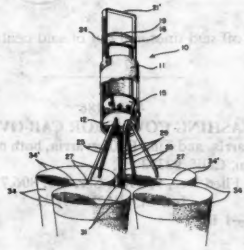
CONTAINER CARRYING MEANS

Roy A. Houston, Rte. 1, Box 248, Kenansville, N.C. 28349

Filed May 23, 1985, Ser. No. 737,099

Int. Cl.[4] B66C *1/92, 1/28*

U.S. Cl. 294—87.1 9 Claims



1. A container carrying means comprising: an elongated housing structure; an end plate fixedly secured to one end of said housing structure and including a plurality of paired openings; slide means having a central area and a peripheral area means mounted within said housing structure so as to be slidable towards and away from said end plate; a plurality of paired linkages including first and second linkage means slidingly disposed in respective paired openings, each of said first linkage means being pivotally connected to the central area of said slide means, each of said second linkage means being pivotally connected to the peripheral area of said slide means, said first and second linkage means being crossed prior to entering said paired openings; and at least one of each paired linkages being angulated whereby when said slide means is moved towards said end plate, the outer ends of each pair of linkages will move away from each other and when said slide means is moved away from said end plate the outer ends of each pair of linkages will move towards each other to make gripping contact with the object to be carried.

4,623,185

BOTTLE CARRIER

Ronald S. Thomas, 115 Lakeland Way, Roswell, Ga. 30076

Filed Jun. 3, 1985, Ser. No. 740,822

Int. Cl.[4] B65D *71/00*

U.S. Cl. 294—87.28 4 Claims

1. A bottle carrier for hand carrying in an upright position a bottle or a set of bottles of the type having an annular projection about the bottle neck with the net weight of the bottles centered directly beneath the hand, and with the bottle carrier having an upright web formed with a central upper opening that provides a hand grip, an array of tines that project laterally to each side of said upright web below said central upper opening, and with a central lower opening beneath said central upper opening of a size to accommodate the capped head of a bottle supported on said tines, and with adjacent tines within said array being spaced apart a distance to support a bottle

neck projection thereon within said central lower opening and being formed with stop means for inhibiting a supported bottle

from sliding off said tines and out of said central lower opening.

4,623,186

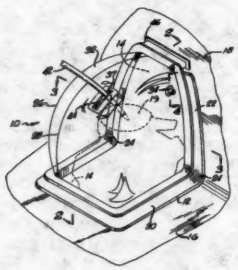
ENGINE WASHING COVER FOR CAB-OVER ENGINES

Jose F. Chavarria, and Tina F. Chavarria, both of P.O. Box 853, San Jacinto, Calif. 92383

Filed Dec. 9, 1985, Ser. No. 806,710

Int. Cl.[4] B62D *63/00*

U.S. Cl. 296—1 R **17 Claims**



1. A cover for use with a motor vehicle engine that is accessible from within the cab of the vehicle, said cab having an engine access opening in the floor of said cab and in an adjacent wall, said cover comprising:

a frame adapted to rest on the floor and the wall of the cab around the access opening;

a first inflatable sheet sealingly attached around its periphery to said frame, said first sheet having a first central aperture;

a second inflatable sheet underlying said first sheet and sealingly attached around its periphery to said frame, said second sheet having a second central aperture in registration with said first central aperture, said first and second sheets being sealingly attached to each other around said first and second central apertures;

expandable spacer means, internally connecting said first and second sheets, for providing an expandable space therebetween; and

air inlet means in said first sheet for allowing the expansion of said space by the introduction of pressurized air thereinto, the expansion of said space thereby inflating said first and second sheets into semi-rigid outer and inner cover elements, respectively;

whereby an implement for cleaning the engine can be passed into the interior of said inner cover element through said first and second central apertures.

4,623,187

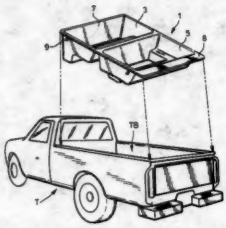
PICK-UP TRUCK INSERT

Aftab Ibrahim, 24 Bondgate Court, Scarborough, Ontario, Canada (M1B 3A1)

Filed Oct. 5, 1984, Ser. No. 657,951

Int. Cl.[4] B60N *1/00*; B62D *33/00*

U.S. Cl. 296—39 R **3 Claims**



1. A seat bearing insert for fitting in the bed of a pick-up truck, said insert being of a size to substantially fill the truck bed to essentially eliminate horizontal movement and including securing means for attaching to the truck to secure said insert against vertical movement when in the truck bed, said insert being provided with forward and rearward sitting regions each having a seat for readily converting the truck bed to a sitting area when inserted therein, each seat comprising a seat portion and a backrest portion extending widthwise across said insert at generally right angles to one another with said backrest portion being located rearwardly of said seat portion such that each seat faces in a forward direction when said insert is fitted in the truck bed.

4,623,188

HEIGHT ADJUSTABLE SUN VISOR FOR AUTOMOTIVE VEHICLES

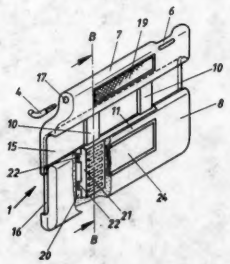
Peter Juraschek, Wuppertal, and Manfred Nowak, Solingen, both of Fed. Rep. of Germany, assignors to Gebr. Happich GmbH, Fed. Rep. of Germany

Filed Oct. 29, 1984, Ser. No. 665,778

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1983, 3341509

Int. Cl.[4] B60J *3/02*

U.S. Cl. 296—97 G **17 Claims**



1. A sun visor for vehicles having a sun visor body of a flat shape and a substantially rectangular peripheral contour;

the said sun visor body consisting of two flat parts including an upper part and a lower part;

both the upper part and the lower part having an upper

longitudinal edge and a lower longitudinal edge, all of said edges extending parallel to each other;

the upper part having in the region of its upper longitudinal edge a support shaft which extends substantially parallel to said upper longitudinal edge and, in the region of an intermediate longitudinal edge, a flat tongue portion extending in the plane of the upper part;

the lower longitudinal edge of the upper part being adjacent to the upper longitudinal edge of the lower part when in an extended position, said tongue portion overlapping a portion of said lower part when in a retracted position;

guide means between the upper part and the lower part making it possible to pull the lower part downwardly away from the upper part and move it upwardly toward the upper part as desired;

the guide means comprising at least one pin which supported by the upper part and extends beyond the lower longitudinal edge of said upper part;

a pin receiver incorporated in said lower part and open on the upper edge of the lower part, the thickness of said pin being less than that of the lower part whereby said pin is receivable within and slidable relative to said lower part.

4,623,189

OPEN SIDED TRAILER

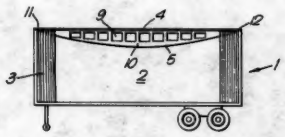
Brian Stead, Blackpool, England, assignor to York Trailer Company Limited, England

Filed Mar. 19, 1985, Ser. No. 713,434

Claims priority, application United Kingdom, Mar. 30, 1984, 8408272

Int. Cl.[4] B60J *5/06*

U.S. Cl. 296—181 **9 Claims**



1. An open sided trailer comprising

a chassis,

a front frame and a rear frame, each of said frames extending vertically upward from and mounted to the front and rear ends, respectively, of said chassis,

a side cantrail extending between and mounted to the upper extremities of said front and rear frames along each side of said chassis, each of said cantrails being generally parallel to said chassis' longitudinal axis, there being no intermediate supports provided between said chassis and said cantrails in the area between said front and rear frames,

a roof covering said chassis, said roof being supported on its front, rear and side edges by said front and rea: frames and said cantrails,

a central spine extending between and mounted to the upper extremities of said front and rear frames, said central spine being located generally midway between said cantrails and generally parallel thereto, said central spine having a generally T-shaped cross sectional configuration with the foot of said T-shaped central spine extending vertically downward beneath the undersurfaces of said cantrails and with the head of said T-shaped central spine cooperating in the support of said roof, and

a series of lateral supports extending between and mounted to said central spine and said cantrails, said lateral supports not extending vertically downward beneath the undersurfaces of said cantrails,

said roof thereby being supported throughout its surface area, and between said front and rear frames and said cantrails, by a space frame system in which only the leg of said T-shaped central spine extends vertically downward inside said trailer beneath a phantom plane that includes the undersurfaces of said cantrails.

4,623,190

MOLDED FENDER FOR AUTOMOBILES

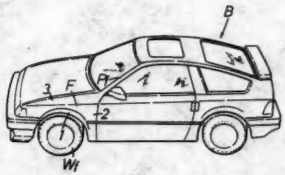
Yoshitsugu Fujimori, Saitama; Ryouhei Adachi, Tokyo; Hiroo Ebisawa; Nobuo Kikuchi, both of Saitama, and Tsuneyuki Wada, Chiba, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 5, 1984, Ser. No. 585,985

Claims priority, application Japan, Mar. 4, 1983, 58-35625; Mar. 4, 1983, 58-35626

Int. Cl.[4] B62D *25/16, 29/04*

U.S. Cl. 296—198 **6 Claims**



1. An automobile fender molded of a synthetic resin or the like for securing to a chassis to cover a wheel, comprising, a thickened arched portion extending longitudinally in a band along the upper face of the wheel, a thickened portion extending in a band along a vertical edge of said fender to be attached to the chassis, a fender body portion thinner than said bands and comprising the majority of said fender, said fender body portion being gradually thickened to join with said thickened bands and, bent portions having arcuate sections formed on an upper edge of said fender and a lower edge of said thickened arched portion, said bent portions extending inwardly of the fender, said arcuate sections of said bent portions having radii of curvature of not less than 0.5 millimeters.

4,623,191

ROTATING AND POSITIONING TOOL FOR AXIALLY SYMMETRICAL WORKPIECES, ESPECIALLY STEERING TIE RODS IN MOTOR VEHICLES

Harald Blume, Immenhausen, and Bodo Wagner, Niestetal, both of Fed. Rep. of Germany, assignors to Wegmann & Co. GMBH, Kassel, Fed. Rep. of Germany

Filed Nov. 19, 1984, Ser. No. 672,564

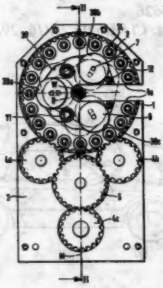
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1984, 3410912

Int. Cl.[4] B23B *31/16*

U.S. Cl. 279—110 **3 Claims**

1. A rotating and positioning tool for axially symmetrical workpieces, especially steering tie rods in motor vehicles, comprising a housing having a recess for inserting the workpiece, said housing containing a powered clamping mechanism adjustable to engage the outside of the workpiece, said clamping mechanism being rotatable around the longitudinal axis of the workpiece, said clamping mechanism comprising: a crown gear having two sides, teeth around its circumference and having an empty space inside it that communicates with the outside through an access slot; means mounting the crown gear for rotation in the housing about an axis of rotation including a ring of ball bearings around the circumference of the crown gear; wherein the empty space is around the axis of rotation and is demarcated by a contour that varies between a maximum and a minimum distance from the axis of rotation during one rotation of said crown gear and includes three segments distributed around the contour at angular distances of 120° and which have the same maximum distance from the axis of rotation and between the segments the distance of the contour to the axis

of rotation decreases continuously to the minimum; means for driving the crown gear comprising a cogwheel drive mechanism engaging the crown gear teeth at two angular displaced points; three tension rollers distributed in the empty space of the crown gear at angles of 120° and rotatably mounted on pivots which are parallel to the axis of rotation of the crown gear; two bearing disks disposed at the two sides of the crown gear; means mounting the bearing disks for rotation in the housing coaxial with the crown gear relative to the crown gear and the housing while not relative to each other, comprising a ring of ball



bearings engaging the peripheries of the bearing disks and spacer means extending through the empty space and interconnecting the bearing disks; wherein each bearing disk has an entry slot extending from the periphery to the axis of rotation and has three slots therein angularly spaced at 120° and extending radially with respect to the axis of rotation of the crown gear and wherein the pivots of the tension rollers are slidably received in the slots and compression springs in the slots biasing the pivots radially outwardly to force the tension rollers into contact with the contour; a releasable brake for engaging at least one of the bearing disks.

4,623,192

SEAT

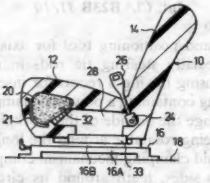
Teruhiko Koide; Teruhiko Kawaguchi; Hideyuki Suzuki, and Tsutomu Muraoka, all of Aichi, Japan, assignors to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, Aichi, Japan

Filed Mar. 24, 1986, Ser. No. 843,252

Claims priority, application Japan, Mar. 26, 1985, 60-43337[U]

Int. Cl.⁴ B60R *21/00*

U.S. Cl. 297—216 **19 Claims**



1. A seat used in combination with a seatbelt system for a vehicle designed to protect an occupant in an emergency situation of the vehicle, so as to restrain the occupant's body, said seat comprising:

(a) a push-up member buried in the front part of a seat cushion;

(b) a movable member provided in said seat cushion such as to be movable toward the front end of said seat cushion, said movable member being adapted to push up said push-up member toward the upper side of said seat cushion when said movable member moves toward the front end of said seat cushion; and

(c) a seatbelt anchor member secured at a part thereof to said movable member, whereby an increase in the seatbelt tension at the time of an emergency situation of the vehicle causes said anchor member to activate said movable member so as to push up said push-up member toward the upper side of said seat cushion, thereby limiting the movement of the occupant's waist toward the front end of the vehicle.

4,623,193

SEAT WITH LUMBAR SUPPORT

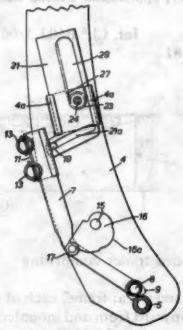
Reiner Lieker, Extertal, Fed. Rep. of Germany, assignor to P.A. Rentrop Hubert & Wagner Fahrzeugausstattungen GmbH & Co KG, Stadthagen, Fed. Rep. of Germany

Filed Feb. 27, 1984, Ser. No. 584,108

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1983, 3306994

Int. Cl.⁴ A47C *7/40*; B60N *1/02*

U.S. Cl. 297—284 **13 Claims**



1. A seat including

a seat portion,

a back rest connected to the seat portion and having a back rest frame and underspringing,

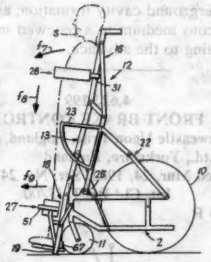
a lumbar support including a pressure strap in operative pressure engagement with said underspringing, and strap extending across the width of the back rest, a carrying frame, a slide member carried by said back rest frame, holding means connected to said carrying frame so as to be upwardly and downwardly slidable relative to said carrying frame, said strap attached to said holding means, pivotal means mounting said carrying frame to the back rest, first drive means mounted on said backrest and operatively connected with said carrying frame for adjusting the pivotal position of said carrying frame relative to the back rest, guide means in said back rest frame receiving said slide member, and second drive means mounted on said backrest for raising and lowering said slide member in said guide means relative to said back rest, interengaging means connecting said slide member to said holding means in an arrangement such that said latter means is pivotally movable fore and aft relative to said back rest frame whereby said lumbar support is movable both upwardly and downwardly and fore and aft relative to said back rest.

4,623,194

BODY-SUPPORTING DEVICE FOR WHEELCHAIR FOR HANDICAPPED PERSON COMPRISING A STRUCTURE ALLOWING AN UPRIGHT POSITION

Bernard Pillot, Romans, France, assignor to International Diffusion Consommateur, France

Filed May 22, 1984, Ser. No. 612,916
Int. Cl.⁴ A61G 5/00
U.S. Cl. 297—316 **9 Claims**



1. A device for supporting the body of a handicapped person within a wheelchair of the type including an articulated elevator structure fitted on the frame of the wheelchair, a backrest having a pair of uprights, a seat articulated on the backrest and on the frame, a footrest assembly having a pair of front uprights and articulated on the seat and the frame, and means for relative pivoting, the device comprising:

(a) a first set of means including two partly bent rigid segments, each segment mounted laterally on a corresponding upright of the backrest by an articulated system which holds and locks the segment in either a generally vertical orientation wherein the segment defines an armrest or in a generally horizontal orientation wherein the segment defines a thoracic half-belt for the person;

(b) each articulated system including a fork joint supporting a stirrup by a substantially horizontal pivot pin, a pivot whose axis is substantially at right angles to the pivot axis connecting the web of the stirrup to an extension of the segment, and a catch borne by the fork joint for engaging within either one of two holes formed in the extension for immobilizing the segment in either the vertical or the horizontal orientation; and

(c) a second set of means including two cradle elements, each cradle element being mounted by two pivot pins of orthogonal directions on a corresponding front upright of the footrest assembly, the cradle elements including means for relative immobilization in a position of alignment wherein the cradle elements are in engagement over the front portions of the legs of the person.

4,623,195

POSITION RETAINING DEVICE FOR DRAFTSMAN CHAIR

Frank S. Avella, Irvine, Calif., assignor to Plan Hold Corporation, Irvine, Calif.

Filed Jun. 26, 1985, Ser. No. 749,319
Int. Cl.⁴ A47C 7/50
U.S. Cl. 297—437 **2 Claims**

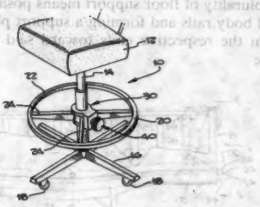
1. In combination with a chair having a seat supported by a column and an adjustable footrest having a sleeve-like hub movable and positionable along said column, the provision of:

means for retaining the footrest in a selected position on the column including

a pair of spaced rings slidably engageable with said column at opposite ends of said hub;

a longitudinally extending member interconnecting said rings at circumferential portions thereof and external to said hub;

and an adjustable knob having a threaded shaft in threaded engagement with said longitudinal member, the end face of said shaft being in contact with said hub whereby tightening of said adjustable knob urges said spaced rings laterally in one direction into spaced pressure contact with



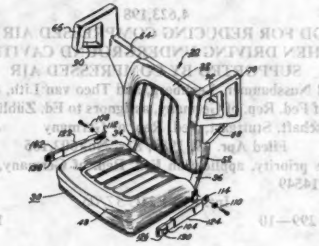
said column, and said internal surface of said hub adjacent the contact of said shaft end with said hub is urged laterally in an opposite direction into pressure contact with the opposite side of said column between said spaced rings.

4,623,196

SAFETY SEAT ASSEMBLY FOR INDUSTRIAL VEHICLES

Thomas W. Roney, Battle Creek, Mich., assignor to Clark Equipment Company, South Bend, Ind.

Filed Sep. 14, 1983, Ser. No. 532,268
Int. Cl.⁴ B60N 1/02
U.S. Cl. 297—464 **24 Claims**



1. A safety seat assembly for use with industrial vehicles to keep the body of the operator within the confines of the operator's compartment area, said assembly comprising a seat member, a back support member mounted generally perpendicular to the seat member, a protective right wing extending laterally outwardly from the right side of said back support member and being rigidly connected thereto and including a forwardly extending grard means disposed on the outer end thereof, and a protective left wing extending laterally outwardly from the left side of said back support member and being rigidly connected thereto and including a forwardly extending guard means disposed on the outer end thereof, said right and left guard means being asymmetrically located in relation to the central vertical plane of the back support member.

4,623,197

SLOPED FLOOR DUMP TRAILER

Eugene F. Stluka, Haverford, Pa., assignor to Florig Equipment Company, Inc., Conshohocken, Pa.

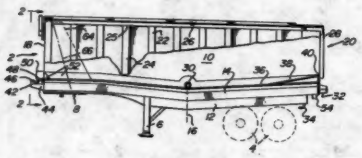
Filed Aug. 20, 1985, Ser. No. 767,929
Int. Cl.⁴ B60P 1/16
U.S. Cl. 298—10 **11 Claims**

11. An improved combination in a towable trailer having

ground engaging support means and a trailer body for holding and dumping liquid containing residue wherein the trailer provides hoist elevation means for raising one end of said body for dumping said body, the improvement comprising:

(a) body rails which slope from the respective ends of the trailer toward a common vertical axis;

(b) a plurality of floor support means positioned adjacent to said body rails and forming a support plane which slopes from the respective ends toward said common vertical axis;



(c) a floor mounted on said plurality of floor support means and sloping from said respective ends towards said common vertical axis;

(d) vertical walls mounted about the perimeter of said floor on both sides and one end thereof;

(e) a dump gate pivotally supported by said side walls and positioned at the other end thereof;

(f) an elevated floor portion positioned adjacent to said dump gate and sloping from the sealing point of said dump gate toward said common vertical axis; and

(g) at least one drain port positioned at said common vertical axis in a side wall adjacent said floor.

4,623,198

METHOD FOR REDUCING COMPRESSED AIR LOSSES WHEN DRIVING UNDERGROUND CAVITIES SUPPORTED BY COMPRESSED AIR

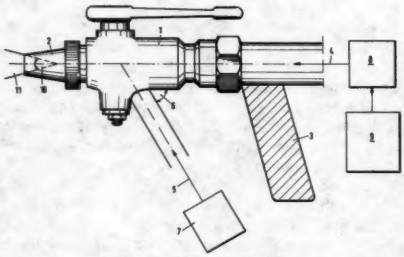
Manfred Nussbaumer, Leonberg, and Theo van Lith, Stuttgart, both of Fed. Rep. of Germany, assignors to Ed. Züblin Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Apr. 19, 1984, Ser. No. 602,185

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1983, 3314549

Int. Cl.[4] E21C *37/06*

U.S. Cl. 299—10 **17 Claims**



1. In a method of reducing compressed air losses in a mining cavity formation when progressively driving underground cavities which are supported by compressed air, said method including the step of sealing part of an advancing cavity having an inner cavity surface exposed by mining and adding a viscous medium as a sealant layer applied in a step-wise manner according to advance of the cavity and also that the sealant layer does not add to the strength of the formation after breaking away the earth; the improvement therewith which comprises the steps of:

using viscous medium having a plastic viscosity of up to about 30 cp and having an apparent viscosity of up to about 50 cp;

combining said viscous medium with a propellant to form a mixture;

applying said mixture, in the form of a spray mist which is directed toward said exposed part of said inner cavity surface, in such a way that said mist penetrates the substratum without significantly destroying said exposed surface part;

moving said viscous medium continuously during advance of the underground cavity formation; and

applying viscous medium in a renewed manner in sections corresponding to the advance.

4,623,199

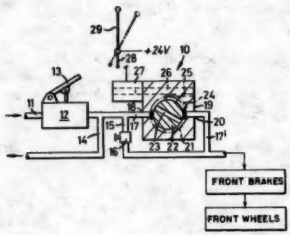
FRONT BRAKE CONTROL

James Steel, Newcastle Upon Tyne, England, assignor to Ogden Electronics Ltd., Yorkshire, England

Filed Mar. 24, 1981, Ser. No. 247,012

Int. Cl.[4] B60T *13/00*

U.S. Cl. 303—6 R **2 Claims**



1. Apparatus for controlling the supply of fluid to a braking system of a vehicle, said vehicle having a front wheel and manually controllable motive selection means for selecting forward and reverse drive of said vehicle, and said braking system including front brake means for braking said front wheel when said fluid is supplied to said front brake means through at least one of first and second conduits, said apparatus further comprising:

means for selectively controlling flow of said fluid in said second conduit in response to operation of said selection means so that said fluid is supplied through said second conduit to said front brake means only when said selection means is operated to select reverse drive of said vehicle.

4,623,200

HYDRAULIC PRESSURE CONTROL VALVE RESPONDING TO LOAD

Masamoto Ando, and Kiyonobu Nagamori, both of Toyota, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed May 29, 1985, Ser. No. 738,785

Claims priority, application Japan, Jun. 6, 1984, 59-084728[U]

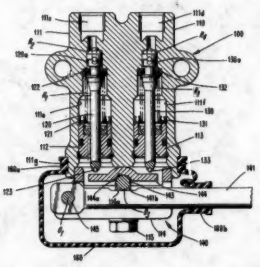
Int. Cl.[4] B60T *8/22*

U.S. Cl. 303—22 R **4 Claims**

1. In a hydraulic pressure control valve responding to load and for use with two independent rear braking systems for transmitting braking hydraulic pressure through two independent pipings to wheel cylinders mounted in the left and right rear wheels of a vehicle, the hydraulic pressure control valve having a single housing, a pair of valves, two pistons which cooperate with the valves to control the hydraulic pressure transmitted to the wheel cylinders and which are mounted in the housing in a parallel relation, and an actuating mechanism for displacing the pistons toward one end of each piston according to the load carried by the vehicle, the other end of

each piston protruding from the housing in a liquid-tight manner so as to be axially slidable,

the improvement wherein said actuating mechanism comprises: a lever mounted to a block mounted in the housing so as to be capable of making rocking motion in the plane containing the axes of the pistons; a spring member for applying an actuating force corresponding to the vehicle load to the rocking end of the lever; a support pin having



both ends fitted in a pair of guide grooves formed in the block such that the pin can slide, the grooves extending parallel to the axes of the pistons at the same distance from the axes, the intermediate portion of the pin bearing on the intermediate portion of the lever; and an equalizer having a curved recess at its center, the equalizer being supported on the support pin such that it can rock about the recess, the both ends of the equalizer coming into abutment with one end of each piston.

4,623,201

SLIDING UNIT FOR TOOL MACHINES

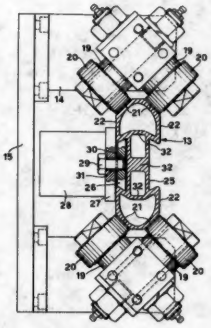
Fiorenzo Gallone, Milan, Italy, assignor to Mondial S.p.A., Milan, Italy

Filed Feb. 13, 1985, Ser. No. 701,302

Claims priority, application Italy, Feb. 13, 1984, 20836/84[U]

Int. Cl.⁴ F16C *29/04*

U.S. Cl. 384—53 **16 Claims**



1. A sliding unit for machine tools, said sliding unit comprising:

(a) a frame;

(b) at least one hollow guide mounted on said frame, said at least one hollow guide having four guide surfaces, a first guide surface, a second guide surface adjacent to said first guide surface and at least approximately perpendicular thereto, a third guide surface adjacent to said second guide surface and at least approximately parallel to said first guide surface, and a fourth guide surface adjacent to said third guide surface and said first guide surface and at least approximately perpendicular to said third guide surface;

(c) at least two supports, each of said at least two supports having at least two rolling surfaces, each of said rolling surfaces rolling on a corresponding one of said four guide surfaces on said at least one hollow guide; and

(d) a machine tool element mounted on said at least two supports.

4,623,202

NON-LINEAR CONTROL TYPE MAGNETIC BEARING

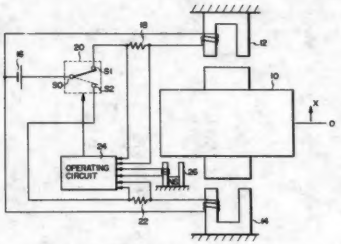
Shitta Shingu, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 22, 1985, Ser. No. 736,858

Claims priority, application Japan, Jul. 11, 1984, 59-143981

Int. Cl.⁴ F16C *39/06*

U.S. Cl. 310—90.5 **7 Claims**



1. A non-linear control type magnetic bearing comprising:

a pair of electromagnet means, disposed opposite to each other in a spaced-apart relation with an object to be levitated therebetween, for attracting the object under their magnetic force;

current supply means for alternately supplying excitation current to the respective electromagnets;

means for detecting the levels of the currents flowing through the respective electromagnets and for generating a pair of current level signals;

velocity sensor means for detecting the velocity with which the object is moved in the mutually opposite directions of the electromagnets and for generating a velocity signal;

difference means for finding a difference between the pair of current level signals and for generating a difference signal;

differentiating means for differentiating the velocity signal and for determining an acceleration rate of the object to generate an acceleration signal;

analog operation means for performing an analog operation on an equation of motion of the object through the use of the difference signal and acceleration velocity signal to find a position displacement of the object and for generating a position displacement signal; and

switching discriminator means for judging a positive or a negative sign of a linear equation for the position displacement signal and velocity signal and for supplying to the current supply means a switching signal which alternately switches a supply of a current to the respective electromagnets.

4,623,203

COMMUTATOR

Robert A. Ritter, Calgary, Canada, assignor to Alberta Oil Sands Technology and Research Authority, Edmonton, Canada

Filed Sep. 26, 1985, Ser. No. 780,269

Int. Cl.⁴ H01R *39/06*

U.S. Cl. 339—5 P **1 Claim**

1. A commutator assembly for supplying electrical power to

a rotating structure having one or more elements to be energized, comprising:

a central support affixed to the structure for rotation therewith, said support carrying a plurality of contacts arranged along a circular line having a centre which coincides with the axis of rotation;

conductive means connecting said contacts with the elements to be energized;

first and second support members mounted on the structure and arranged to bracket the central support;

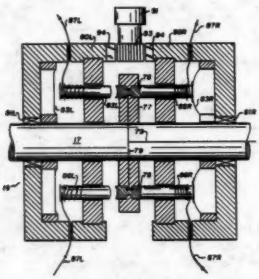
said support members being adapted to free wheel on the structure;

each support member carrying a plurality of contacts which are arranged to correspond with the central support contacts;

each of said support members or its contacts being movable, whereby the contacts may be biased into or out of engagement with the central support contacts;

lead means for connecting the support member contacts with a source of electric power;

means, associated with the first support member, for biasing its contacts into engagement with the central support



contacts when said contacts are aligned and for disengaging them when the second support member contacts first engage the central support contacts;

means, associated with the second support member, for biasing its contacts into engagement with the central support contacts when said contacts are aligned and for disengaging them when the first support member contacts first engage the central support contacts;

said first support member and central support being operative to rotate together when their respective contacts are engaged;

said second support member and central support being operative to rotate together when their respective contacts are engaged; and

means, interconnecting the support members, for rotating the support member, whose contacts are not engaged, in a direction opposite to that in which the engaged support member is being rotated by the central support, and through an angle equal to that through which the engaged support member is rotated, whereby the two support members each oscillate back and forth through a small angle while their contacts alternatively energize the central support contacts.

4,623,204

UNIVERSAL GROUND CLAMP

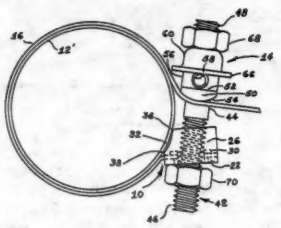
William T. Auclair, Pinney St., R.F.D. #1, Winsted, Conn. 06098

Continuation-in-part of Ser. No. 611,315, May 17, 1984, abandoned. This application May 24, 1985, Ser. No. 737,553

Int. Cl.[4] H01R *4/60*

U.S. Cl. 339—14 L **20 Claims**

1. A universal ground clamp for independent attachment to and release from grounding electrodes and ground wires of different size comprising a strap sub-assembly for electrically engaging the grounding electrode and a bolt sub-assembly mounted on the strap sub-assembly and providing electrical contact with the ground wire of an electrical system, said strap sub-assembly including an elongated flexible strap and a generally U-shaped contact bracket securely and retainably mounting one end of said strap and having arcuate contact surfaces for providing electrical contact with the grounding electrode, the strap portion adjacent said contact bracket extending tangentially of said arcuate contact surfaces, said bolt sub-assembly consisting essentially of a single bolt having a fixed land with a platen intersecting the axis of the bolt at an intermediate position along its length, said platen having an elongated bearing surface facing a first end of the bolt and being convexly



bowed in its transverse dimension, a wire-receiving aperture intermediate said bowed surface and a second end of said bolt opposite said first end, said wire-receiving aperture having an axis extending generally parallel to the axis of said convexly bowed surface for receiving the ground wire of an electrical system, a clamping cap mounted on said second bolt end and moveable toward said platen for clampably engaging a ground wire positioned within said wire-receiving aperture and retaining means on said bolt for movement toward said convexly bowed platen surface, said bolt sub-assembly being mounted on said strap sub-assembly upon encirclement of the grounding electrode by the elongated strap whereby the contact surfaces of the strap remote from the bracket conformably engages the convexly bowed bearing surface.

4,623,205

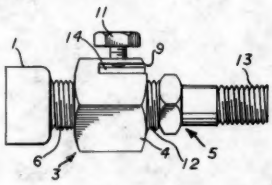
BONDING FLANGE ADAPTER

Earl L. Barron, P.O. Box 10356, Houston, Tex. 77206

Filed Dec. 2, 1982, Ser. No. 433,157

Int. Cl.[4] H01R *4/66*

U.S. Cl. 339—14 L **4 Claims**



1. In combination

a bonding flange for a telecommunications cable, sleeve, or splicing case, having a female threaded opening,

an adapter comprising a tubular metal body having a male threaded tubular extension threadedly connected in said threaded opening, an internal passage, and an enlarged passage portion having internal female threads adapted to receive a threaded connector of an air valve for introducing compressed air into or measuring air pressure in the telecommunications cable,

said metal adapter body having a longitudinally extending

slot substantially parallel to a longitudinal axis thereof and of a size sufficient to receive a metal bonding ribbon for bonding or grounding the telecommunications cable, sleeve, or splicing case on which said adapter is secured, and

a clamping screw extending from an outer surface of said body into said slot for clamping a metal bonding ribbon in place.

4,623,206

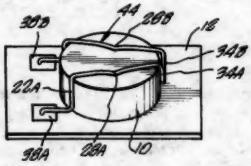
SPRING BATTERY RETAINER

James T. Fuller, 235 N. Malina Ave., Orange, Calif. 92669

Filed Dec. 28, 1984, Ser. No. 687,528

Int. Cl.[4] H01R *9/09;* **A47B** *97/00*

U.S. Cl. 339—17 C **8 Claims**



1. A battery retainer comprising

contact section means adapted to contact a button shaped battery, having oppositely facing sides and a circular circumference region joining said sides, at a plurality of points along said circumference region of said battery, at least three of said points forming a triangle, and

said contact section means includes compressive pressure means which in conjunction with base support means of said battery retainer is adapted to apply hold-down pressure on a first side of said battery and to secure said battery to an electrical circuit means with the second side of said battery being pressed against said circuit means, said base support means being adapted to space apart said contact section means to enable said battery retainer to be secured to an electrical circuit means.

4,623,207

PRINTED CIRCUIT BOARD CONNECTOR

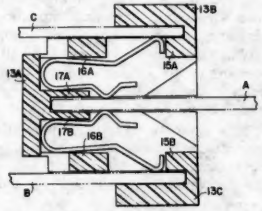
Masao Sasaki, Takasaki; Kazuo Wada, Isezaki, and Jiro Tanuma, Takasaki, all of Japan, assignors to Oki Densen Kabushiki Kaisha, Kanagawa and Oki Electric Industry Company, Limited, Tokyo, both of, Japan

Filed Jun. 25, 1985, Ser. No. 748,770

Claims priority, application Japan, Jun. 26, 1984, 59-94559[U]

Int. Cl.[4] H01R *9/09*

U.S. Cl. 339—17 LM **5 Claims**



1. A printed circuit board connector for connecting at least two separate circuit boards, which comprises:

(a) a connector body having:

(1) a plurality of comb tooth shaped walls;

(2) a first contact stopper wall formed as a closed end wall of said connector body and a second contact stopper wall formed on one side and at an open end of said connector body;

(3) a first contact supporting wall formed on one side and near an intermediate portion of said connector body and a second contact supporting wall formed on the other side and near the intermediate portion of said connector body; and

(b) a plurality of roughly U-shaped spring contacts having each a base portion, a first arm portion with a first elastically bent contact portion near a free end thereof and a second arm portion with a second elastically bent contact portion near a free end thereof, said spring contacts being each housed within a space formed between two adjacent comb tooth shaped walls in such a way as to be loosely supported between said first and second contact stopper walls in the longitudinal non-elastic direction thereof with the base portion thereof in contact with the first contact stopper wall and with the second elastically bent contact portion in contact with the second contact stopper wall and as to be compressedly supported by said first and second contact supporting walls near the base portion thereof in lateral elastic direction thereof with the first arm portion in contact with the first contact supporting wall and with the second arm portion in contact with the second contact supporting wall, the first and second elastically bent contact portions being each brought into contact with contact surfaces of two separate circuit boards, independently, when the circuit boards are attached to the board connector, separately.

4,623,208

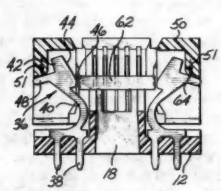
LEADLESS CHIP CARRIER SOCKET

Joseph A. Kerul, and Donald E. Ralstin, both of South Bend, Ind., assignors to Wells Electronic, Inc., South Bend, Ind.

Filed Apr. 3, 1985, Ser. No. 719,718

Int. Cl.[4] H01R *9/09, 13/629*

U.S. Cl. 339—74 R **6 Claims**

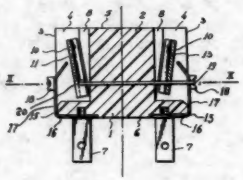


1. A socket for a leadless chip carrier, said socket including a base member having a central opening therein, a plurality of conductive resilient contacts for engaging conductive pads on said carrier, each contact anchored in said base member and including an upwardly extending part, said contacts positioned on at least two side edges of said base member opening, and constituting opposing clamp means for engaging said carrier within said socket, the improvement wherein each contact includes a cantilevered part projecting from its upwardly extending part outwardly of said base member opening, and a movable top overlying said base member, said top including an abutment means in contact with each said contact cantilevered part for moving and flexing said contacts in an outward direction relative to said base member opening upon movement of the top in a substantially straight line downward direction to space said contacts from said carrier to allow insertion thereof into the socket.

4,623,209
SAFETY FEMALE PLUG CONNECTOR

Domingo Mangone, Soldado Baigorria 1456, Grand Bourg, Pcia.de Buenos Aires, Argentina

Filed Apr. 1, 1985, Ser. No. 718,544
Claims priority, application Argentina, Apr. 9, 1984, 296237
Int. Cl.[4] H01R *13/631*
U.S. Cl. 339—75 P **6 Claims**



1. A female safety socket, comprising an insulating casing with at least two insertion openings each extending into the casing from a mouth for the pins of a male plug, each of the insertion openings being provided inside the casing with a contact piece electrically connected to a connection terminal outside the casing adapted for connection to an electrical wire thereto; CHARACTERIZED in that:

(a) each insertion opening is tapered from the insertion mouth inwards and is bounded along one side by a fixed piece substantially parallel to the direction of insertion and bounded along another side opposite said one side by a swinging piece hinged adjacent the mouth, one of said two pieces bounding the sides of said insertion opening being made of electrically conductive material and the other being made of insulating material;

(b) resilient contact tongues, flexible transversely to the direction of insertion, disposed adjacent to respective ones of the electrically conductive pieces within the insulating casing but outside of the insertion openings, said contact tongues each being mounted at one end rigidly to the insulating casing and being electrically connected with said respective connection terminal; and,

(c) connecting member connecting said swinging pieces for respective ones of the insertion openings to said contact tongue for the other insertion opening whereby as a male plug pin is inserted into one of the insertion openings said connecting member attached to said swinging piece disposed therein moves said contact tongue for the other insertion opening into electrical contact with said electrically conductive material bounding the other insertion opening thereby making electrical contact with a male plug pin disposed therein.

4,623,210
LATCHING MEANS FOR ELECTRICAL CONNECTORS

Masao Tsukakoshi, Tokyo, Japan, assignor to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 592,487, Mar. 23, 1984, abandoned. This application Oct. 25, 1985, Ser. No. 792,226
Claims priority, application Japan, Apr. 28, 1983, 58-062968
Int. Cl.[4] H01R *13/627*
U.S. Cl. 339—91 R **7 Claims**

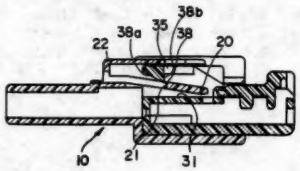
1. An electrical connector assembly, comprising:

a first dielectric housing member and a second dielectric housing member;

sections of said first and second housing members being matable;

said first housing member having an integral cantilevered latch arm means containing a latching opening and said second housing member having an integral latching section which cooperate to latch the housing members in a latched position when the matable sections are mated together;

an integral hood means on said first housing member having side sections extending from said first housing member and a top section parallel to an upper surface of said first housing member, said hood means covering a portion of said latch arm means which includes said latching opening; and

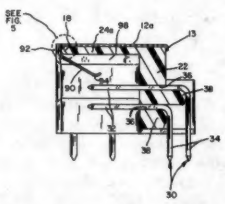


a latching plate of said latching section from which protrudes a latching projection being positioned beyond an upper surface of the second housing member, a bottom surface of said latching section being located such that the height between a top of said latching projection and said bottom surface permits a free end of said latch arm means to move far enough to clearly disengage said latch arm means from said latching projection when the free end of said latch arm means is moved away from said latching projection.

4,623,211
SHIELDED CONNECTOR ASSEMBLY

Philip J. Dambach, Naperville, and Jerry D. Kachlic, Lisle, both of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Jun. 24, 1985, Ser. No. 748,100
Int. Cl.[4] H01R *9/09, 13/648*
U.S. Cl. 339—143 R **7 Claims**



1. A shielded connector assembly mateable with a plug connector having an external metallic shield, said connector assembly including:

an insulating receptacle housing having a mating edge with a plug-receiving cavity extending into the housing from the mating edge, an endwall opposite the mating edge and a plurality of sidewalls joining said endwall to define said plug receiving cavity,

first terminals mounted in the receptacle housing for mating contact with corresponding plug terminals,

a stamped metallic conductive shield mounted on the outside of said receptacle housing having resilient reversely-bent plug shield engaging cantilever finger members extending from said mating edge to said plug receiving cavity,

the improvement wherein:

said receptacle housing further includes at least three sidewalls with projecting shield mounting stud means integrally formed on at least two of said sidewalls and with one intermediate sidewall located between said at least two sidewalls and overlying said finger members and extending to said mating edge;

said shield has at least three sidewalls adapted for slideable

mounting about said receptacle housing so as to enclose at least three of said housing sidewalls;

at least two of said shield side walls including slot means for slideably receiving and engaging said stud therein;

whereby the shield is securely held onto the housing so as to maintain the finger members in a fixed relationship to said mating edge of said receptacle housing and to said first terminals, before and after plug insertion in said cavity;

wherein said first terminals include board engaging portions extending in a predetermined direction to engage mounting apertures of a printed circuit board;

said shield further includes board engaging portions depending from said sidewalls in said predetermined direction to engage other mounting apertures of said printed circuit board; and

said shield further includes a substantially open end for slideably receiving said housing, said slot means extending from said open end, and said shield further including strap means straddling said slot means adjacent said open housing end to maintain a predetermined alignment between said board engaging portions of said receptacle terminal and said shield.

4,623,212

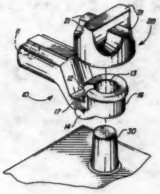
TWIST-TIGHTENED ELECTRICAL TERMINAL CONNECTOR

Wayne C. Hogan, Sr., P.O. Box 671, Ione, Wash. 99139

Filed Feb. 21, 1984, Ser. No. 581,682

Int. Cl.[4] H01R *11/26*

U.S. Cl. 339—236 **8 Claims**



1. A twist-tightened electrical terminal connector comprising:

a sleeve having an interior surface for releaseably engaging and electrically contacting an electrical terminal, said sleeve having an exterior frustoconical circumferential thread, and a single expansible slot communicating between said interior surface and said exterior circumferential thread; and

an anti-bind tab means coupled to said sleeve for resisting disengagement expansion of said slot and said circumferential thread.

4,623,213

METHOD FOR JOINING TWO ALUMINUM CONDUCTORS OF ELECTRIC CABLES AND THE JOINT THUS OBTAINED

Enrico Dotti, Milan, and Angelo Sala, Merate, both of Italy, assignors to Societa' Cavi Pirelli S.p.A., Milan, Italy

Filed Oct. 29, 1985, Ser. No. 792,506

Claims priority, application Italy, Nov. 27, 1984, 23761 A/84

Int. Cl.[4] H01R *4/02*

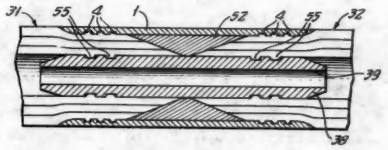
U.S. Cl. 339—276 R **10 Claims**

7. A joint between the conductors of a pair of electrical cables, each of said conductors comprising a plurality of elongated aluminum elements, said joint comprising:

tapered end portions of said conductors, the taper at said end portions having an outer surface which extends circumferentially of the axes of said conductors and a cross-section which decreases in size from a larger size at portions of said conductors spaced from the ends thereof to a smaller size at said ends of said conductors;

weld metal electrically interconnecting said tapered end portions of said conductors; and

a metal sleeve around said weld metal and around and contacting portions of said conductors at each side of said weld metal, said sleeve having an exterior size substantially equal to the exterior size of the portions of said conductors at opposite ends of and exterior to said sleeve, said sleeve having a plurality of interior grooves which contain aluminum of said conductors.



4,623,214

HOLOGRAMS

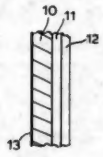
Kaveh Bazargan, London, England, assignor to Satori Limited, London, England

Division of Ser. No. 465,620, Feb. 10, 1983, abandoned. This application Dec. 5, 1984, Ser. No. 678,755

Claims priority, application United Kingdom, Feb. 15, 1982, 8204401

Int. Cl.[4] G03H *1/06*

U.S. Cl. 350—3.77 **6 Claims**



1. An integral hologram device in which the hologram may be viewed directly comprising a venetian blind film, a hologram and a plane grating, the hologram being provided on one surface of the venetian blind film and the plane grating being embossed on the other surface.

4,623,215

HOLOGRAMS

Kaveh Bazargan, London, England, assignor to Satori Limited, London, England

Continuation of Ser. No. 465,620, Feb. 10, 1983, abandoned. This application Jul. 25, 1985, Ser. No. 758,590

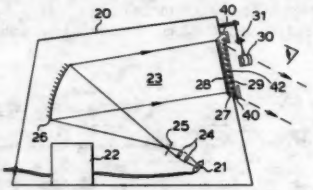
Claims priority, application United Kingdom, Feb. 15, 1982, 8204401

Int. Cl.[4] G03H *1/24*

U.S. Cl. 350—3.85 **8 Claims**

1. A hologram viewing apparatus comprising a housing having a window in the form of a diffraction grating in combination with a venetian blind film, a light source within the

housing for illuminating the window from behind, and hologram holding means associated with the housing for holding a



hologram adjacent the outside of the window for viewing the hologram by looking into the housing.

4,623,216

LIGHT BEAM SCANNING APPARATUS

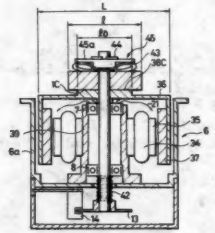
Hideki Sato, Tokyo, and Yoshinori Sugiura, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 6, 1984, Ser. No. 577,209

Claims priority, application Japan, Feb. 10, 1983, 58-8625[U]; Feb. 10, 1983, 58-8626[U]

Int. Cl.⁴ G02B *26/10*

U.S. Cl. 350—6.8 **37 Claims**



10. A light beam scanning apparatus comprising;

a rotatable polygonal mirror member for scanning a light beam;

a rotary shaft;

means for holding said rotary shaft and said rotatable polygonal mirror member integrally;

drive means for rotating said rotary shaft, said drive means having a rotatable member having a magnet and made integral with said rotary shaft, and a coil member provided on the rotary shaft side with respect to said rotatable member so as to be opposed to said magnet;

means for securing said coil member to the body of said apparatus; and

first and second bearing means for rotatably supporting said rotary shaft on the side opposite to said rotatable polygonal mirror member with respect to said rotatable member.

4,623,217

OPTICAL-FIBER LIGHTING UNIT HAVING A MOVABLE LAMP HOLDER

Jan-Åke Hallén, Brinketorpsvägen 3, Partille, Sweden (433 00)

PCT No. PCT/SE82/00337, § 371 Date Jun. 15, 1983, § 102(e) Date Jun. 15, 1983, PCT Pub. No. WO83/01372, PCT Pub. Date Apr. 28, 1983

PCT Filed Oct. 18, 1982, Ser. No. 513,117

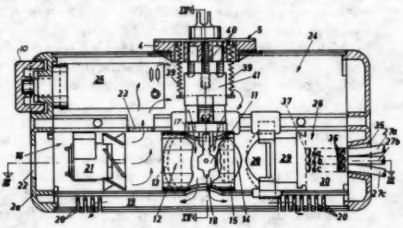
Claims priority, application Sweden, Oct. 16, 1981, 8106114

Int. Cl.⁴ G02B *6/00*; F21V *7/04*

U.S. Cl. 350—96.10 **9 Claims**

1. In an optical-fiber lighting unit including a casing having an optical system therein with a light source to which a plurality of optical-fiber light conductors are optically connectable, the end faces of the light conductors being aligned in an alignment line transverse to their optical axes, the improvement comprising:

a lens mounting means slidably mounted within the casing for displacement along a path parallel to the alignment line of the end faces of the light conductors to a number of positions corresponding to the end faces of the light conductors; and



a focusing switch lens mounted in said mounting means, said switch lens being adapted to focus light from the light source onto the end face of a respective light conductor, so that the light can be supplied to at least one light conductor at a given time via said switch lens.

4,623,218

OPTICAL FIBRE CABLE AND METHOD OF AND APPARATUS FOR DETERMINING LOCATION OF A BREAK THEREIN

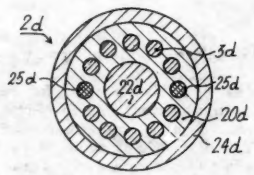
Michel Laurette, 16, allée des Charmes, Les Clayes-sous-Bois, France (78340), and Marc P. Lenoir, 19, rue Borromée, Paris, France (75015)

Filed Feb. 16, 1982, Ser. No. 348,767

Claims priority, application France, Feb. 20, 1981, 81 03441

Int. Cl.⁴ G02B *6/44*

U.S. Cl. 350—96.23 **27 Claims**



3. An optical cable having built in structure for enabling the location of a break in a fiber of the cable to be determined comprising a central core carrying plural longitudinally extending optical fibers at spaced angular intervals, an insulating jacket surrounding the central core, portions of the core and jacket abutting against each other, metallic longitudinally extending members embedded in at least one of the core and jacket at spaced angular intervals, one of said members being an electric lead having an elongation on break which is no greater than the elongation on break of the optical fibers, others of said members being electric leads that strengthen the cable and have an elongation on break much greater than that of the optical fibers, the effects of tension on the cable tending to causes cracks or breaks in the fibers without causing breaks in the cable, the electric lead having an elongation on break no greater than the elongation on break of the optical fibers breaking in the vicinity of the crack or break of the optical fiber, the cable, electric lead having a tendency to break and strengthening lead being constructed and arranged so that electric capaci-

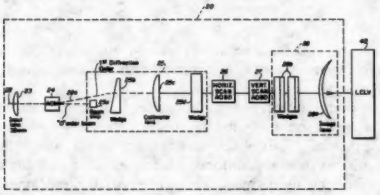
tance at one end of the cable between the electric lead having a tendency to break and one of the strengthening electric leads provides an indication of the location of the break.

4,623,219

REAL-TIME HIGH-RESOLUTION 3-D LARGE-SCREEN DISPLAY USING LASER-ACTIVATED LIQUID CRYSTAL LIGHT VALVES

John A. Trias, La Mesa, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 15, 1985, Ser. No. 723,372
Int. Cl.[4] G02F *1/13*
U.S. Cl. 350—351 **8 Claims**



1. An apparatus for displaying real-time, high-resolution three-dimensional projected images on a distant screen at video image signal rates comprising:

a first and a second laser raster scanner means each for reciprocably imparting both vertical and horizontal scans of a separate coherent beam modulated in accordance with left eye information or right eye information respectively;

a first and a second means, one aligned to receive the left eye information modulated scanned coherent beam and the other aligned to receive the right eye information modulated coherent beam each for selectively changing the polarization orientation of linearly polarized light incident thereon in response to a voltage pattern directly produced therein by the left eye information modulated scanned coherent beam or the right eye information modulated scanned coherent beam respectively;

means disposed for projecting a high intensity light beam onto the first and second polarization changing means; and

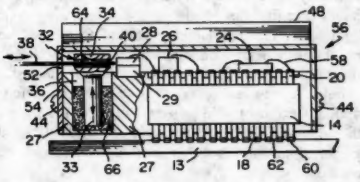
means disposed to intercept the high intensity light beam from the projecting means for reflecting a first linearly polarized component of high intensity light onto the first light polarization orientation changing means and for directing modulated reflected high intensity light modulated in accordance with the left eye information modulated scanned coherent beam onto the distant screen, and, for directing a second linearly polarized component of high intensity light that is orthogonal to the first component onto the second light polarization orientation changing means and for reflecting modulated reflected high intensity light modulated in accordance with the right eye information modulated scanned coherent beam onto the distant screen, the left eye information modulated high intensity light and the right eye information modulated high intensity light on the distant screen forming real-time, high resolution three-dimensional images at video image rates when observed with left and right eye polarized glasses.

4,623,220

LASER TO FIBER CONNECTION

Dimitry Grabbe, Middletown, and Iosif Korsunsky, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jul. 2, 1984, Ser. No. 627,148
Int. Cl.[4] G02B *6/36*
U.S. Cl. 350—96.20 **2 Claims**



1. The combination of a light source (28), an optical fiber (38) which is axially aligned with the light source, and a support for the light source and the fiber, the combination being characterized in that:

the support comprises a support block (27), the light source (28) being mounted on one surface of the support block, the support block having a well (36) extending into the one surface adjacent to the light source (28),

a locating and holding pedestal (32) is provided for the fiber, the pedestal having a stem portion (33) which extends into the well (36),

the stem portion (33) having a reduced cross section compared to the well (36), the pedestal (32) being held in the well by a first solidified fused material (66) in the well in surrounding relationship to the stem portion (33),

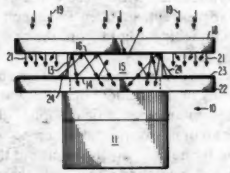
the pedestal (32) having a head portion, a fiber holding aperture (40) extending through the head portion, the fiber (38) extending through the aperture (40) and being held therein by a second solidified fused material (64) which is in surrounding relationship to the fiber, the second fused solidified material (64) having a melting point which is higher than the melting point of the first solidified fused material (66).

4,623,221

DEVICE FOR PROVIDING A SUBSTANTIALLY FLAT LIGHT FIELD

Joseph E. Marchegiano, Wilmington, Del., assignor to RCA Corporation, Princeton, N.J.

Filed Feb. 14, 1985, Ser. No. 701,629
Int. Cl.[4] G02F *1/00*
U.S. Cl. 350—321 **9 Claims**



1. A device, including an optical system and a light field flattener, for providing a substantially flat light field, said light field flattener comprising:

a first light transparent disc arranged to transmit light to said optical system, said light transparent disc having a light transparent polished edge, at least one polished surface and at least one other surface;

an opaque layer coextensive with said polished surface whereby said opaque layer prevents light from passing

directly through said light transparent disc to said optical system;

a layer of reflective material arranged between said opaque layer and said polished surface;

a second light transparent disc affixed to said polished surface and coaxial with said first disc, said second disc having a diameter greater than the diameter of said first disc whereby an overhang portion of said second disc overhangs said first disc; and

a light reflective annular ring affixed to said at least one other surface of said first disc whereby light passes through said overhand portion and is reflected by said annular ring to said polished edge and is reflected to said optical system by said polished surface; the light passing through said first disc decreases in intensity as the distance, along said polished surface, from said edge increases.

4,623,222

LIQUID CRYSTAL TYPE DAZZLE-FREE TRANSMISSIVE-REFLECTIVE MIRROR

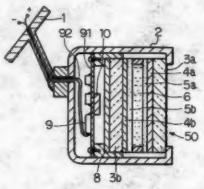
Hiroshi Itoh, Oubu; Shinya Ohmi, Anjo; Yasutoshi Suzuki, Oubu; Tsuyoshi Fukada, Nagoya, and Kunihiko Hara, Aichi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 27, 1984, Ser. No. 593,946

Claims priority, application Japan, Nov. 14, 1983, 58-213625; Nov. 25, 1983, 58-222719

Int. Cl.⁴ G02F *1/133;* G02B *17/00*

U.S. Cl. 350—331 T **20 Claims**



11. A liquid crystal type dazzle-free rear view reflection mirror arrangement in an automobile comprising:

a frame body mounted within said automobile and having a closed shape except an open front end thereof for the passage of an incident light from the rear of said automobile;

a liquid crystal provided within said frame body for varying transmittivity of the incident light passing therethrough in dependence on an electric field applied thereto;

a semi-transparent mirror provided behind said liquid crystal within said frame body for transmitting therethrough and reflecting, for generating a rear view thereon, the incident light passing trough said liquid crystal;

a photo sensor provided behind said semi-transparent mirror within said frame body for sensing the intensity of the incident light transmitted through said semitransparent mirror; and

a liquid crystal control circuit connected to said photo sensor for controlling the electric field applied to said liquid crystal, the magnitude of the electric field being increased with the increase in the intensity of the incident light sensed by said photo sensor.

4,623,223

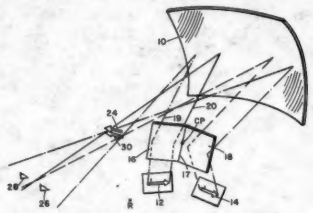
STEREO IMAGE DISPLAY USING A CONCAVE MIRROR AND TWO CONTIGUOUS REFLECTING MIRRORS

Paul S. Kempf, P.O. Box 690, Solana Beach, Calif. 92075-0690

Continuation-in-part of Ser. No. 453,599, Dec. 27, 1982, abandoned. This application May 20, 1985, Ser. No. 736,120

Int. Cl.⁴ G02B *27/22, 17/06;* H04N *13/04*

U.S. Cl. 350—138 **14 Claims**



1. Apparatus for creating a stereo image display from right and left stereo views of a common object, comprising:

a concave mirror;

two contiguous reflecting mirrors whose juncture is located at or near the conjugate point of the image plane of the entrance pupils of the eyes of an observer, said reflecting mirrors being positioned and orientated for separately directing light rays from right and left stereo views, respectively, of a common object onto the concave mirror such that the light rays are focussed after reflection from the concave mirror; the concave mirror comprising means for focussing the right and left view light rays directed from the reflecting mirrors into a right and left real image in space between the concave mirror and the eyes of an observer, both real images being superimposed in apparent registration in the same plane at their point of focus to the eyes of an observer positioned beyond their point of focus for being viewed by an observer on or off axis to the concave mirror.

4,623,224

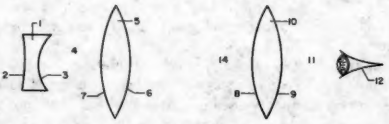
ANASTIGMATIC EYEPIECE

Thomas L. Clarke, 5814 SW. 81 St., Miami, Fla. 33143

Filed Sep. 23, 1982, Ser. No. 422,214

Int. Cl.⁴ G02B *25/00, 9/04, 9/12*

U.S. Cl. 350—410 **3 Claims**



1. An eyepiece comprising a negative lens component nearest the objective and first and second positive lens components, said eyepiece being so designed as to substantially satisfy the equations,

$$S1=-2F1,$$

$$2S2^2-(3-7e)S2F1-4[(e-3)F1]=0,$$

$$F3=3S2/(3+2S2/F1-e),$$

and

$$F2=-F1F3/(F1+F3),$$

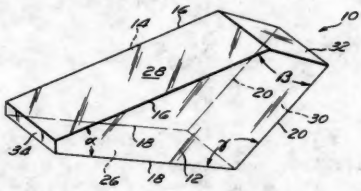
wherein the reference symbol F1 represents the equivalent focal length of the negative lens component, the symbol F2 and F3 represent the focal lengths of the first and second positive lens components respectively, the symbols S1 and S2 represent the axial air spaces between the negative and first positive and between the two positive lenses respectively, and e is a non-negative number that is substantially the ratio between the exit pupil distance and the effective focal length.

4,623,225

ANAMORPHIC PRISM FOR BEAM SHAPING

John F. Forkner, South Laguna, Calif., assignor to Melles Griot, Irvine Company, Irvine, Calif.

Filed Jun. 29, 1984, Ser. No. 626,135
Int. Cl.[4] G02B *13/10*
U.S. Cl. 350—421 **27 Claims**



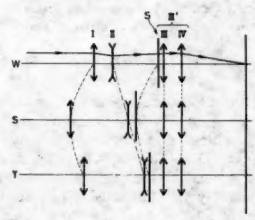
1. An apparatus, comprising:
a single, unitary anamorphic prism having an input face for receiving a beam of light and an output face for outputting said beam of light, said faces oriented to cause anamorphic magnification of said beam of light and further oriented to cause said beam at said output face to be substantially parallal to said beam at said input face.

4,623,226

COMPACT ZOOM LENS SYSTEM HAVING THREE LENS GROUPS

Tooru Fujii, Hino, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 2, 1982, Ser. No. 446,402
Claims priority, application Japan, Dec. 8, 1981, 56-196282
Int. Cl.[4] G02B *15/163, 15/14*
U.S. Cl. 350—427 **9 Claims**



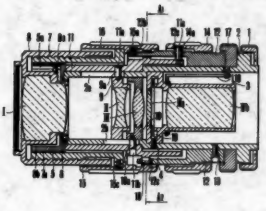
1. A zoom lens system comprising a first lens group having positive refractive power, a second lens group having negative refractive power, a third lens group having positive refractive power, and an aperture stop arranged between said second lens group and said third lens group, said third lens group being fixed relative to the image plane, said second lens group being moved along the optical axis for varying focal length of the zoom lens system as a whole, deviation of the image position caused by moving said second lens group being compensated by moving said first lens group along the optical axis, and said aperture stop being moved together with said first lens group for minimizing reduction of the marginal rays.

4,623,227

ZOOM LENS MOUNTING

Shigeru Kamata, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 24, 1982, Ser. No. 410,882
Claims priority, application Japan, Sep. 2, 1981, 56-138150
Int. Cl.[4] G02B *15/00*
U.S. Cl. 350—430 **1 Claim**



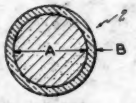
1. A zoom lens mounting, comprising:
a fixed barrel;
focusing means having a focus lens, a focus lens holder, and a focusing actuator member,
said focusing actuator member being mounted on the outside of said fixed barrel, and said focus lens being moved along the optical axis by operation of said focusing actuator member;
zooming means having a zoom lens, a zoom lens holder, a zooming actuator member and a cam member inserted in the inside of said fixed barrel, said cam member being rotated by operation of said zooming actuator member to move said zoom lens along the optical axis to perform zooming; and
means for changing the range of movement of said focusing actuator member depending upon the position of said zooming actuator member;
said changing means comprising:
recesses provided respectively at the outer periphery of said cam member and at the inner periphery of said focusing actuator member;
a control member which is held in a hole which is perforated through said fixed barrel in such a way as to move along the radial direction of the lens axis by means of said cam member or said focusing actuator member;
wherein said control member is moved along said radial direction corresponding to the focal length set by said zooming actuator member, thus limiting the amount of rotation of said focusing control member.

4,623,228

COMPOSITE MIRROR SUBSTRATE

Francis S. Galasso, Manchester; Karl M. Prewo, Vernon, and Richard D. Veltri, East Hartford, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Oct. 25, 1984, Ser. No. 664,823
Int. Cl.[4] G02B *5/08, 5/10*
U.S. Cl. 350—609 **14 Claims**



1. A high strength, high temperature stable mirror substrate comprising a glass matrix material reinforced with graphite fibers wherein the improvement comprises:
(a) utilizing as the graphite fiber reinforcement, graphite

fibers having a layer of an oxidized silicon carbide coating thereon, resulting in a mirror substrate having a transverse strength at least twice that of the glass matrix reinforced with uncoated graphite fibers.

9. A process for producing an improved graphite-glass mirror substrate by impregnating reinforcing graphite fibers with a glass slurry, stacking layers of the glass impregnated fibers in a die to produce a symmetrical composite, and hot pressing the composite wherein the improvement comprises:

(a) coating the reinforcing carbon fibers, prior to impregnation with the glass slurry, with a layer of silicon carbide;

(b) heating the silicon carbide coated graphite fiber to oxidize the coating;

resulting in a mirror substrate with transverse strength at least twice that of the graphite-glass substrate reinforced with uncoated graphite fibers.

4,623,229

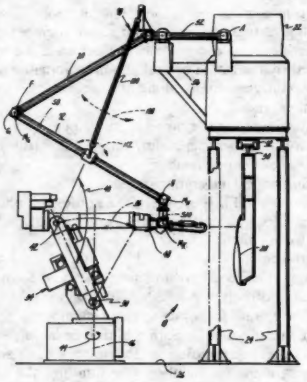
ARTICULATED LASER ARM

Louis Galan, Ann Arbor, Mich., assignor to Photon Sources, Inc., Livonia, Mich.

Filed Sep. 29, 1983, Ser. No. 537,150

Int. Cl.[4] G02B *5/08*

U.S. Cl. 350—623 **23 Claims**



1. A focusing clamp for use at the end of articulated arm structure associated with a laser wherein the laser beam is conducted via the articulated arm structure to the focusing clamp, said focusing clamp comprising a tubular element through which the laser beam is conducted and which has a proximal end through which the laser beam enters and a distal end through which the laser beam exits, a convergent focusing lens on said tubular element between its proximal and distal ends for focusing the laser beam to a point of utilization, two confronting tips on opposite sides of the point of utilization, means for mounting one of said tips on the distal end of said tubular element so that the focused laser beam can pass to the point of utilization, means including an operating mechanism to provide for relative movement of said tips toward and away from each other for clamping and releasing a workpiece at the point of utilization, and in which each said tip comprises a corresponding bearing assembly with the bearing assemblies being coaxial with the focused laser beam and in confronting relationship to each other across the point of utilization to facilitate movement across a workpiece disposed between the tips.

4,623,230

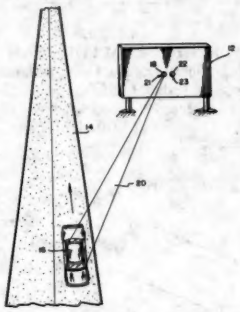
MEDIA SURVEY APPARATUS AND METHOD USING THERMAL IMAGERY

Lee S. Weinblatt, 797 Winthrop Ave., Teaneck, N.J. 07666

Continuation of Ser. No. 518,614, Jul. 29, 1983, abandoned. This application Nov. 18, 1985, Ser. No. 799,190

Int. Cl.[4] A61B *3/14*

U.S. Cl. 351—210 **5 Claims**



1. A media survey method for monitoring visual observation by a subject viewer of a transitionally viewed display comprising the steps of:

(a) directing a beam of infrared radiation from a display toward the subject without any intervening reflection of the beam,

(b) detecting reflected radiation from the subject including retinal eye reflected radiation along the line of sight when the display is viewed by the subject,

(c) generating representative signals corresponding to the intensity of the reflected radiation,

(d) processing the signals to provide a thermal image, and

(e) discriminating retinal eye reflected radiation on the thermal image to provide a positive indication of the visual observation by the subject of the display.

4,623,231

SYSTEM FOR AUTOMATICALLY SETTING FILM SENSITIVITY IN CAMERA

Takeo Saito, and Shinji Nagaoka, both of 934-13, Shikawatashi, Yotsukaido-shi, Chiba-ken, Japan

Filed Oct. 9, 1984, Ser. No. 658,478

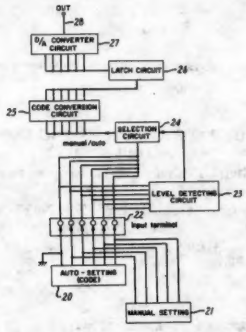
Claims priority, application Japan, Oct. 7, 1983, 58-156668[U]

Int. Cl.[4] G03B *7/24*

U.S. Cl. 354—21 **8 Claims**

1. A system for automatically setting film sensitivity information in a camera comprising: plural input terminals; means for applying to the input terminals auto film sensitivity electric signals corresponding to automatically set film sensitivity information and manual film sensitivity electric signals corresponding to manually set film sensitivity information; level detecting circuit means for detecting the voltage level of the auto and manual film sensitivity signals and producing an auto output signal in response to detection of an auto film sensitivity signal and a manual output signal in response to detection of a manual film sensitivity signal; selection circuit means for selecting the auto film sensitivity signals or the manual film sensitivity signals in response to the auto or manual output signal; code converting circuit means responsive to the auto or manual film sensitivity signals selected by the selection circuit means for converting the same into corresponding digitally coded film sensitivity data representative of the selected film sensitivity information; latch circuit means for holding the digitally coded film sensitivity data; digital-to-analog converter circuit means for converting the digitally coded film

sensitivity data held in the latch circuit means into a corresponding analog voltage; and exposure control circuit means



responsive to the analog voltage for determining an exposure value based on the selected film sensitivity information.

4,623,232

CAMERA WITH IMPROVED FILM LEADER CAPTURING MEANS

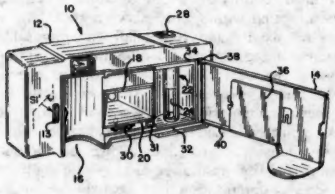
Wan C. Wong, North Point, Hong Kong, and Shigeru Oshima, Tokyo, Japan, assignors to W. Haking Enterprises Limited, North Point, Hong Kong

Continuation-in-part of Ser. No. 477,247, Mar. 21, 1983, Pat. No. 4,525,048. This application Nov. 29, 1984, Ser. No. 676,080

The portion of the term of this patent subsequent to Jun. 25, 2002, has been disclaimed.

Int. Cl.[4] G03B *1/12*; B65H *75/28*

U.S. Cl. 354—173.1 **14 Claims**



1. In a still camera including a housing having a film compartment with a cassette-chamber at one side of an imaging station and for receiving a film cassette with an apertured film leader extending therefrom, film guide surface means on opposite sides of said imaging station against which said film can be flattened, a take-up spool chamber disposed on the opposite side of said imaging station and having a take-up spool therein, said take-up spool having a slot means for accepting a film leader to be manually inserted into said slot means, said slot means having hook means for capturing the apertured portion of the film leader inserted thereinto, said spool being movable into a given most ideal position where said hook means can most effectively capture the apertured portion of said film leader, said camera further having a door movable between a film compartment closing position to a film compartment exposing position where said cassette-receiving chamber and the length of said take-up spool are exposed for cassette and leader insertion, said door when closed pressing said film flat against said guide rail means, electric motor drive means for driving said take-up spool in at least a film advancing direction so as to feed subsequent frames of fresh film to said imaging station, and rewind means for rewinding said film from said take-up spool back to said dispenser, the improvement comprising:

switching means responsive to the position of said take-up spool in a position other than said ideal position for momentarily energizing said motor drive means to position said take-up spool slot means in said ideal position.

4,623,233

ELECTROMAGNETICALLY DRIVEN SHUTTER DEVICE

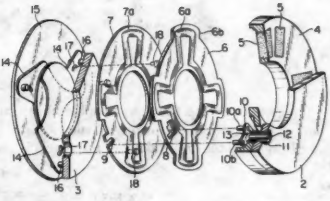
Minoru Yamada; Eiji Ito, and Masaru Nagai, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 564,007, Dec. 21, 1983. This application Mar. 17, 1986, Ser. No. 841,016

Claims priority, application Japan, Dec. 23, 1982, 57-225051; Dec. 23, 1982, 57-225052; Dec. 23, 1982, 57-225053; Dec. 23, 1982, 57-225054; Dec. 23, 1982, 57-225055; Dec. 23, 1982, 57-225059; Dec. 23, 1982, 57-225060

Int. Cl.[4] G03B *9/08*

U.S. Cl. 354—229 **21 Claims**



1. An electromagnetically driven shutter device comprising:

at least one first moving coil member used to drive blades to control an aperture and shutter time,

at least one second moving coil member used to control the moving distance of said first moving coil member by being located in a plurality of positions including its initial position and positions angularly displaced clockwise and counter clockwise from the initial position,

said second moving coil member also used to control the diameter of a stop,

fixed permanent magnets which effect a magnetic field on said coil members, and

a yoke opposite to said magnets,

wherein said coil members are disposed between the magnets and the yoke.

4,623,234

CAMERA

Masami Shimizu, Tokyo, and Shinichi Matsuyama, Kanagawa, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 697,003, Jan. 31, 1985, abandoned. This application Dec. 4, 1985, Ser. No. 805,403

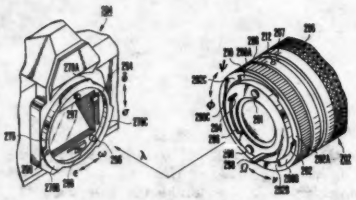
Claims priority, application Japan, Feb. 3, 1984, 59-19169

Int. Cl.[4] G03B *17/00*

U.S. Cl. 354—286 **10 Claims**

10. A camera of the kind changing the kind of selectable automatic exposure control modes according to the type of photo-taking lens mounted thereon, comprising:

(a) detecting means for detecting the type of the photo-taking lens mounted on the camera; and



(b) means for varying the kind of selectable automatic exposure control modes according to the type of the photo-taking lens detected by said detecting means.

4,623,235

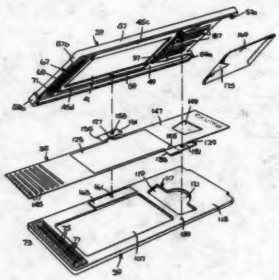
SINGLE USE FILM DEVELOPING ASSEMBLY

Jean D. Lewis, Westport; Willfred Goldschmidt, Weston; Donald Coiro, Huntington, all of Conn., and Phillip V. Engler, Tarrytown, N.Y., assignors to Scop-X Research and Development Limited Partnership, New York, N.Y.

Filed Jul. 18, 1984, Ser. No. 631,890

Int. Cl.[4] G03D *3/00*

U.S. Cl. 354—312 **29 Claims**



1. An assembly for developing an exposed radiation sensitive film, comprising:

a container having a chamber therein, said chamber having an inlet end and an outlet end;

a developer package positioned in said chamber, said developer package comprising a sealed rupturable envelope containing a film treating fluid;

tab means integral with said envelope and secured to said container, whereby as said envelope is drawn from said chamber said tab means is torn to rupture said envelope to permit said fluid to enter said chamber, said tab means including a first tab and a second tab spaced from one another, said first tab being disposed at a distance from said inlet end substantially less than the distance of said second tab from said inlet end; and

linking means for coupling said envelope to the film, whereby said film is positioned in said chamber as the ruptured envelope is withdrawn therefrom.

4,623,236

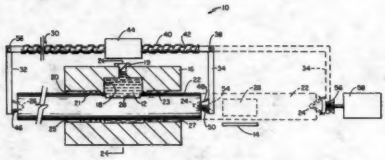
PHOTOGRAPHIC PROCESSING COMPOSITION APPLICATOR

Joseph A. Stella, Peabody, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 31, 1985, Ser. No. 793,177

Int. Cl.[4] G03D *5/06*

U.S. Cl. 354—318 **11 Claims**



1. An applicator for applying a coating of photographic processing composition to a length of sheet material, said applicator comprising:

a housing having means defining a reservoir for containing a supply of photographic processing composition in a substantially non-oxidative environment;

means for defining a passageway communicating between said reservoir and the exterior of said housing;

an elongate member mounted within said passageway, said elongate member including means for receiving a predetermined quantity of the photographic processing composition located within said reservoir; and

means for axially and rotationally moving said elongate member along and about its longitudinal axis from a first position, wherein at least a portion of said receiving means is located in said reservoir, for receiving the quantity of processing composition, and a second position, wherein at least a portion of said receiving means is located exteriorly of said housing and rotationally displaced from its orientation in said first position so as to enable the photographic processing composition to be coated onto the sheet material.

4,623,237

AUTOMATIC FOCUSING DEVICE

Naoya Kaneda; Youichi Iwasaki, both of Kanagawa, and Masamichi Tohyama, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 3, 1985, Ser. No. 752,170

Claims priority, application Japan, Jul. 7, 1984, 59-139784; Jul. 12, 1984, 59-143318; Jul. 30, 1984, 59-157281; Jul. 31, 1984, 59-159075

Int. Cl.[4] G03B *3/00*

U.S. Cl. 354—403 **3 Claims**

1. An automatic focusing device for a camera comprising:

a focus adjusting lens;

driving means for driving said lens;

light projecting means for projecting a distance measuring light toward an object to be photographed;

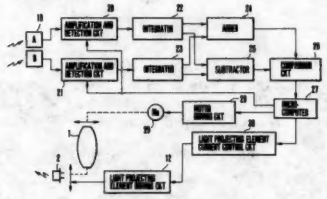
light receiving means having two light receiving areas, said means being arranged to convert the quantitites of light received by said light receiving areas into electrical signals respectively;

comparison means arranged to obtain the sum of and a difference between said electrical signals produced from

said two light receiving areas and to compare said sum or said difference of said signals with a comparison signal; and means to enable operator in accordance with the following steps:

(a) emitting a normal amount of light from said light projecting means;

(b) receiving the reflection of the ordinary amount of light from an object to be photographed by said light receiving means and integrating a light receiving signal within a prescribed time;



(c) performing a first comparison by the output signal based on said integrating step;

(d) increasing the amount of light emitting from said lighting projecting means on the basis of the comparison result of said first comparing step;

(e) detecting the in-focus state with light received under said increased amount of emitting light; and

(f) returning the increased light amount of said light projecting means to the normal light amount after the end of said in-focus state detecting step.

4,623,238

CAMERA SYSTEM CAPABLE OF AUTOMATIC FOCUS CONTROL

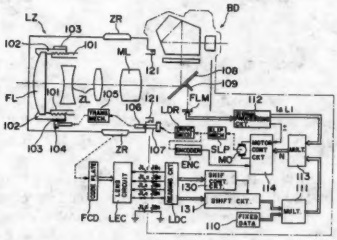
Nobuyuki Taniguchi, Tondabayashi; Norio Ishikawa, Osaka; Yasuaki Akada, Sakai; Takeshi Egawa, Sennan, and Kunio Kawamura, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jan. 31, 1984, Ser. No. 575,839

Claims priority, application Japan, Feb. 1, 1983, 58-15860; May 9, 1983, 58-81533; Jul. 11, 1983, 58-126433; Jul. 26, 1983, 58-137371

Int. Cl.[4] G03B *3/00*

U.S. Cl. 354—406 **15 Claims**



1. In a camera system capable of automatic focus control in response to focus detection by means of receiving light through an objective lens, an improvement comprising:

means for receiving light through the objective lens to produce electric signals;

means for processing the electric signals to generate a defocusing information indicative of defocusing degree and defocusing direction relative to an ideal focal plane;

means for generating a driving power for automatic focus control;

means for controlling the generating means in response to the processing means;

means for causing the receiving means and the processing means to periodically repeat the production of the electric signals and the generation of the defocusing information during the generation of the driving power to keep the controlling means informed of the newest defocusing information in the course of generation of the driving power;

means for detecting a condition for stopping the generation of the driving power to stop the generation of the driving power on the condition;

means for confirming the establishment of the condition in response to the processing means with generation of the driving power completely stopped to determine the necessity of reopening the generation of the driving power in case that the condition is not really established, wherein the detecting means includes first means responsive to the processing means for reporting an in-focus condition during the generation of the driving power, and the confirming means includes second means responsive to the processing means for reporting an in-focus condition with the generation of the driving power completely stopped; and further comprising means for finally finishing the generation of the driving power in response to the second reporting means to fix the focus adjustment for a shot when the in-focus condition is reported.

4,623,239

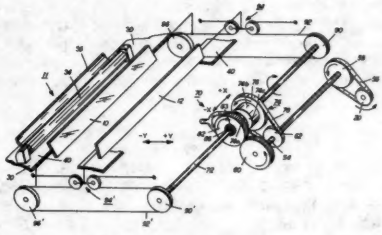
OPTICAL SCANNING SYSTEM

Robert G. Zambelli, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 21, 1985, Ser. No. 703,781

Int. Cl.[4] G03G *15/00*

U.S. Cl. 355—8 **5 Claims**



1. A scanning apparatus for reproducing a stationary original document supported on an object surface, the apparatus including optical means for progressively scanning the surface of the original and a lens for receiving the image from said scanning means and for projecting the scanned image onto a moving photosensitive member, the improvement wherein said optical means comprises at least one scanning assembly, adapted to travel along a scan and rescan path parallel to said object surface;

a drive shaft adapted to be driven at a constant velocity by the motion of said photosensitive member,

a scanning assembly drive mechanism mechanically coupled to said drive shaft, and to said scanning assembly, said drive mechanism adapted to alternately drive said scanning assembly at a first scan velocity v and a second rescan velocity v′; and

a scanning assembly reversal mechanism operatively positioned between said scanning assembly and said drive mechanism, said reversal mechanism adapted to be periodically engaged by the movement of said scanning assembly, such engagement changing the operation of said drive mechanism so as to reverse the direction of travel of said scanning assembly.

4,623,240

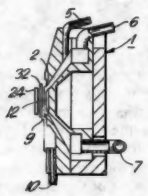
METHOD OF DRYING ELECTROPHOTOSENSITIVE MEMBER IN ELECTROPHOTOGRAPHIC RECORDING OR COPYING SYSTEM OF WET TYPE

Akinori Kimura, and Shuichi Ohtsuka, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 31, 1985, Ser. No. 696,590

Int. Cl.[4] G03G *15/10*

U.S. Cl. 355—10 4 Claims



1. A method of drying an electrophotosensitive member in an electrophotographic recording or copying system of the wet type comprising the steps fo bringing a developing mask of a developing section into initmate engagement with an exposed electrophotosensitive member to define a specific area to be developed, supplying a liquid developer only to said specific area of said electrophotosensitive member defined by said developing mask to develop said electrophotosensitive member, supplying a blast of squeezing gas into said developing section while said electrophotosensitive member is in intimate engagement with said developing mask of said developing section, thereby sequeezing said liquid developer to such an extent that a filmy layer of said liquid developer remains on the entire surface of said specific area, causing relative movement of said electrophotosensitive member from said developing section to a drying section having an opening of an area which is larger than said specific area defined by said developing mask while the filmy layer of said liquid developer still remains on the entire surface of said specific area, and thereby uniformly drying said specific area wetted with said liquid developer.

4,623,241

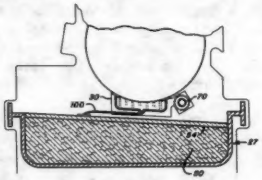
DEVELOPING APPARATUS AND METHOD FOR A PHOTOCOPIER EMPLOYING LIQUID DEVELOPMENT

William R. Buchan, Pepperell, Mass.; Jerome R. Faucher, and John M. Cosby, both of Nashua, N.H., assignors to Nashua Corporation, Nashua, N.H.

Filed Jul. 18, 1983, Ser. No. 524,099

Int. Cl.[4] G03G *15/10, 15/06, 9/08*

U.S. Cl. 355—10 4 Claims



1. In a development apparatus for visualizing a latent image on a photosensitive surface using a liquid developer, said apparatus having

a development electrode,

a developer tank containing a supply of liquid developer,

a pump means for pumping liquid developer from the tank at least to the development electrode,

a filter means positioned within the developer tank,

means for mounting the developer tank for receiving liquid developer at least from the development electrode, and

said receiver liquid developer being at least partially filtered by said filter means,

the improvement comprising

means for directing said received liquid to a free liquid volume portion of said developer tank,

wherein said filter means comprises an open cell foraminous filter block having an average pore size greater than the size of particles in the liquid developer, and

said pump means has an outlet for pumping liquid from said free liquid portion, under pressure, into said filter block.

4,623,242

VARIABLE SPEED IMAGE-FORMING APPARATUS

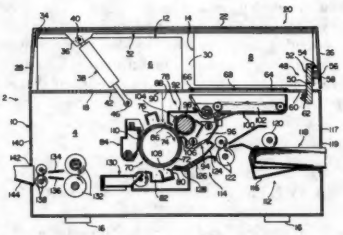
Kiyoshi Hayashi, Takatsuki; Setsuo Hori; Nobuyuki Hirata, both of Sakai; Kazuhiro Kobayashi, and Masayuki Mizuno, both of Osaka, all of Japan, assignors to Mita Industrial Co., Ltd., Japan

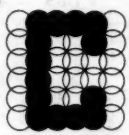
Division of Ser. No. 556,213, Nov. 29, 1983, Pat. No. 4,557,586. This application Sep. 9, 1985, Ser. No. 773,974

Claims priority, application Japan, Nov. 30, 1982, 57-210288; Nov. 30, 1982, 57-181696[U]

Int. Cl.[4] G03G *15/00*

U.S. Cl. 355—14 R 4 Claims





1. An image-forming apparatus comprising optical means for projecting a scanned light beam to be controlled according to an image to be formed, electrostatic image-forming means for forming an image corresponding to the scanned light beam including an electrostatographic material and means for moving the electrostatographic material through an exposure zone for irradiation with the scanned light beam from the optical means, and control means for controlling the optical means and the image-forming means, said control means being adapted to control the optical means by feeding to the optical means image signals for controlling the scanned light beam according to the image to be formed and to control the image-forming means by controlling the moving means to control movement of the electrostatographic material; wherein

the optical means includes first changing means for changing the diameter of the scanned light beam, and

the control means includes second changing means for changing the speed of feeding of the image signal to the optical means according to the change in the diameter of the scanned light beam and third changing means for changing the moving speed of the electrostatographic

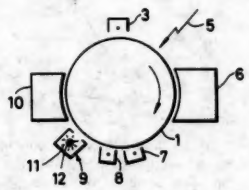
material in the image-forming means according to the change in the diameter of the scanned light beam.

4,623,243

APPARATUS FOR IMPROVING THE PERFORMANCE OF NON-CRYSTALLINE SILICON PHOTOSENSITIVE MATERIAL IN AN ELECTRONIC COPIER

Toshiyuki Iijima; Hedeki Kina, and Masaharu Nanba, all of Kanagawa, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki and Fuji Electric Corporate Research & Development Limited, Yokosuka, both of, Japan

Filed May 13, 1983, Ser. No. 494,268
Claims priority, application Japan, May 18, 1982, 57-83623
Int. Cl.[4] G03G *21/00*
U.S. Cl. 355—15 **12 Claims**



1. An apparatus for forming latent images on a photosensitive layer, said apparatus comprising:

(a) a photosensitive material of non-crystalline silicon;

(b) a first charging device for placing a residual electric charge on said material;

(c) image forming means including a first light source for irradiating the charged photosensiive layer to produce a latent image on the surface of said material;

(d) light charge erasing means for optically removing the residual charges remaining on said photosensitive material; and

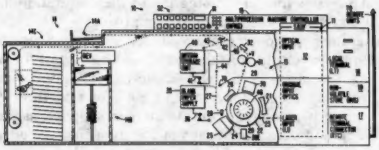
(e) corona charge erasing means for electrically removing the residual charges remaining on said photosensitive material, the intensity of the charge erasing current produced by said corona charge erasing means being selected from the range of negative one quarter (¼) to negative five-fourths (5/4) of the intensity of the charging current produced by said first charging device.

4,623,244

COPY PRODUCTION MACHINES

Donald R. Andrews; Roger E. Kuseski, both of Longmont, and Terence Travis, Boulder, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 729,534, Oct. 4, 1976, abandoned. This application Feb. 14, 1977, Ser. No. 768,651
Int. Cl.[4] G03B *27/32*
U.S. Cl. 355—24 **165 Claims**



1. A copy production machine having an image processing portion for printing successive images on copy sheets to produce copies, a plurality of copy output units,

a first image source operatively connected to said portion for automatically supplying images to said portion to automatically produce print copies,

a second image source operatively connected to said portion and capable of supplying at least one image to said portion to produce a convenience copy from said supplied image,

interrupt means to indicate a given copy is to be made by one of said image sources,

control means responsive to said interrupt means indicating said given copy is to be made by said one image source to interrupt operation of another of said image sources to enable copy production based on an image supplied by said one image source interleaved with copy production based on images supplied by said another image source and,

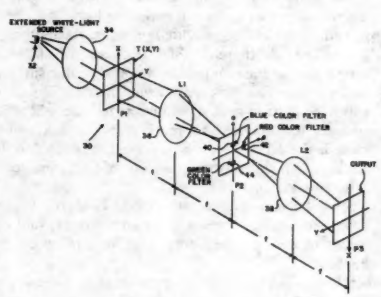
means responsive to said control means to separate copies made from said image sources to two of said separate output units, respectively, so that said image sources can operate independently of each other.

4,623,245

SYSTEM OF WHITE-LIGHT DENSITY PSEUDOCOLOR ENCODING WITH THREE PRIMARY COLORS

Francis T. S. Yu, State College, Pa., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 21, 1985, Ser. No. 704,109
Int. Cl.[4] G03B *27/32, 27/52;* G02B *27/42, 27/46*
U.S. Cl. 355—32 **14 Claims**



1. A method of white-light density pseudocolor encoding with three colors comprising the steps of:

(a) providing a positive transparency of subject matter under observation;

(b) producing a negative transparency from said positive transparency;

(c) obtaining a product image transparency from said positive and negative transparencies;

(d) sequentially sampling said positive transparency, said negative transparency, and said product image transparency onto a black and white photographic film to produce a spatially encoded photographic film with three sets of images thereon;

(e) inserting said spatially encoded photographic film into the input plane of a white-light pseudocolor encoder; and

(f) color filtering the image obtained in the Fourier Transform plane of the white-light pseudocolor encoder in order to form a color coded image of said subject matter in the output plane of the white-light pseudocolor encoder, said color coded image being generated with three colors.

4,623,246
PHOTOGRAPHIC PRINTING APPARATUS

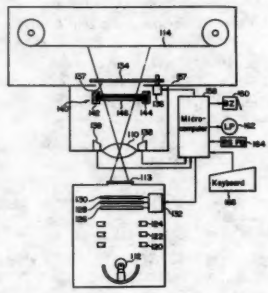
Kazufumi Kubota, and Kanji Tokuda, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 9, 1985, Ser. No. 764,147

Claims priority, application Japan, Aug. 29, 1984, 59-179785; Oct. 5, 1984, 59-209536; Oct. 5, 1984, 59-209537; Oct. 5, 1984, 59-209540

Int. Cl.[4] G03B *27/80*

U.S. Cl. 355—38 **23 Claims**



1. A photographic printing apparatus for printing an image formed on a negative film on photographic paper by means of an exposure light source, which comprises:

(a) a shutter disposed between said photographic paper and a lens employed to print said film image on said photographic paper by means of exposure light;

(b) a reflective surface provided on the surface of said shutter on the side thereof which is closer to said lens, said reflective surface comprising a non-specular surface;

(c) a light receiver disposed outside the optical path of the exposure light in such a manner as to face said reflective surface and adapted to receive, when said shutter is closed, the light which is reflected from said reflective surface, said light forming an out-of-focus image at said reflective surface; and

(d) control means connected to said light receiver and a keyboard which is actuated by an operator, said control means receiving signals from said light receiver and said keyboard,

whereby it is possible to measure an averaged density of said film image.

4,623,247
DOCUMENT SCANNERS

Hugh Wilman, Potters Bar, England, assignor to The British Library Board, London, England

Filed Dec. 17, 1984, Ser. No. 682,170

Claims priority, application United Kingdom, Dec. 24, 1983, 8334480

Int. Cl.[4] G03B *27/62, 27/04*

U.S. Cl. 355—75 **8 Claims**

1. In a document scanner which has a housing having a window through which a document can be illuminated and scanned to produce a photocopy of the document, the improvement comprising:

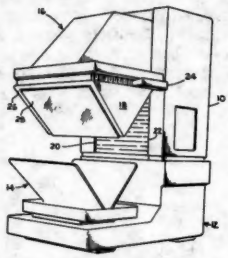
said housing having a wedge-shaped section having at least two faces and a window being provided in at least one face of said wedge-shaped section;

a V-shaped trough being disposed vertically below said wedge shaped section of the housing and having two opposing sides to form a book support in which a book will rest, the angle formed by said sides at least generally corresponding to the included angle of the wedge-shaped section of the housing; and

positioning means comprising:

guide means for constraining the wedge-shaped section to movement generally in vertical direction;

manually operable means for vertically moving the wedge-shaped section relative to the V-shaped trough, along the guide means and between at least a raised position, in which the wedge-shaped section is spaced apart from the



V-shaped trough, and a lowered position, in which the window of the wedge-shaped section is brought closely adjacent an open book resting in said V-shaped trough; and

counterbalance means to compensate for the weight of said housing to facilitate said manual vertical movement of the housing's wedge-shaped section relative to the said book support.

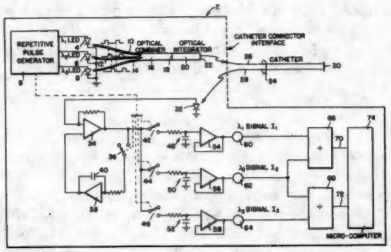
4,623,248
APPARATUS AND METHOD FOR DETERMINING OXYGEN SATURATION LEVELS WITH INCREASED ACCURACY

John M. Sperinde, San Jose, Calif., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Feb. 16, 1983, Ser. No. 467,087

Int. Cl.[4] G01N *33/48, 33/72*

U.S. Cl. 356—41 **7 Claims**



1. Apparatus for determining the oxygen saturation level of blood under test, said apparatus comprising:

generating and detection means for supplying radiation at three wavelengths to the blood under test and for detecting the intensity of back-scattered radiation emanating from the blood under test at each of said three wavelengths in response to the radiation so supplied, said generating and detection means including a first circuit means for generating intensity signals respectively representative of the intensity of said back-scattered radiation; and

signal processing means for computing the oxygen saturation level of the blood under test, said signal processing means including a second circuit means connected to receive said intensity signals respectively representative of the intensity of said back-scattered radiation for deriving

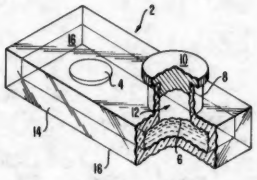
first and second ratio signals, said signal processing means also including means connected to receive said first and second ratio signals for calculating the oxygen saturation level as a function of only said first ratio signal when said oxygen saturation level is below a predetermined value and for calculating the oxygen saturation level as a function of both said first and second ratio signals when the oxygen saturation level is above said predetermined value.

4,623,249

CONTAINER FOR AN OPTICAL ELEMENT

Alan H. Grant, 3208 Woodhollow Dr., Chevy Chase, Md. 20015

Filed Oct. 14, 1983, Ser. No. 543,115
Int. Cl.[4] A45C *11/04*; G01B *9/00*
U.S. Cl. 356—124 **14 Claims**



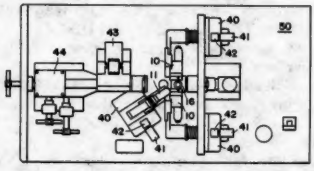
1. Apparatus for storing an optical element comprising a container having a cavity for receiving said optical element, and opening means communicating with said cavity for allowing said element to be inserted and removed from said cavity, wherein said cavity comprises a first set of opposed optical surfaces for allowing optical examination of said element in a first direction and a second set of optical surfaces angularly related with said first set for allowing optical examination of said optical element in a second direction and wherein said opening means comprises an elongated hollow element displaced vertically and horizontally from said cavity and extending to a height above the uppermost one of said surfaces whereby said cavity may be completely filled with a liquid.

4,623,250

DC PLASMA JET GENERATOR FOR EMISSION SPECTROCHEMICAL ANALYSIS

Koichi Onishi, and Takashi Suganuma, both of Katsuta, Japan, assignors to Doryokuro Kakunenryo Kaihatsu Jigyodan, Tokyo, Japan

Filed Sep. 7, 1983, Ser. No. 530,122
Claims priority, application Japan, Oct. 12, 1982, 57-178779
Int. Cl.[4] G01N *21/73*
U.S. Cl. 356—316 **4 Claims**



1. A DC plasma jet generator for emission spectrochemical analysis, comprising:

a frame,

first and second anode blocks pivotally mounted on said frame, respectively positioned along a first axial line and a second axial line, each terminating at one end thereof at a common central point;

a cathode block pivotally mounted on said frame, positioned along a third axial line terminating at one end thereof at said common point, said first, second and third axial lines together defining a generally inverted Y shape having a base and two tips, said cathode block being positioned along said base, said cathode block including a cathode extending along said third axial line;

said first and second anode blocks respectively including:

first and second cylinders respectively extending along said first and second axial lines, each of said first and second cylinders having a first axial cylinder end and a second axial cylinder end between said first axial cylinder end and said common point,

first and second cooling blocks respectively mounted on said second axial cylinder end of said first and second cylinders,

first and second pistons, each having a first axial piston end and second axial piston end between said first axial piston end and said common point and having respective first and second recesses in said second axial piston end, respectively reciprocally movable axially in said first and second cylinders toward and away from said common point, said first and second recesses each having a first axial recess end and a second axial recess end between said first axial recess end and said common point,

first and second rare earth metal magnets respectively mounted in said first and second recesses at said first axial recess end, and

first and second anodes, each having a first axial anode end and a second axial anode end between said first axial anode end and said common point, respectively having said first axial anode end received in said first and second recesses, said first axial anode end being formed of a magnetically attractive metal so that the first axial anode ends of said first and second anodes are respectively attracted into said first and second recesses by said first and second magnets, said second axial anode end comprising a graphite rod, said first and second anodes and said cathode being simultaneously projectable toward said common point into contact thereat; and

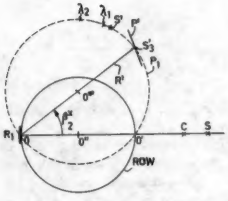
means for pivoting said first and second anode blocks and said cathode block into upright orientations so as to expose said first and second anodes and said cathode for upward removal and replacement.

4,623,251

METHOD FOR FOCUSING SPHERICAL HOLOGRAPHIC DIFFRACTION GRATINGS WORKING BY REFLECTION, AND DISPERSIVE LENSES AND SPECTROMETERS APPLYING THIS METHOD

Michel Pouey, Viroflay, France, assignor to Centre National de la Recherche Scientifique, Paris, France

Filed Jul. 26, 1983, Ser. No. 517,418
Claims priority, application France, Jul. 28, 1982, 82 13205
Int. Cl.[4] G01J *3/18, 3/36*
U.S. Cl. 356—328 **13 Claims**



1. A method for focusing spherical holographic diffraction gratings of the reflective type having radius of curvature R, and for dispersing the different radiations making up a polychromatic light comprising the steps of: (a) using a holographic

grating, and one of a fixed entrance slit combined with at least one fixed exit slit and a multichannel detector, and (b) adjusting the holographic grating so that for a wavelength λ and a diffraction order m such that $mn\lambda=\sin\alpha+\sin\beta$, and for any object distance $r=Re$ (e being the object distance divided by the value of the radius of curvature R of the grating) and any angle of incidence α, the image distance $r'=Re'$ (e' being the image distance divided by the radius of curvature R of the grating) is determined, for the angle of diffraction β, by the relationship:

$$\frac{1}{e}=\cos\alpha+\frac{1}{e'}-\cos\beta+\left(\frac{\sin\alpha+\sin\beta}{n\lambda_o}\right)(k_2-k'_2)=0$$

in which $k_2-k'_2=\rho_c-\cos\eta-\rho_D+\cos\delta$, corresponding to the sum of the sagittal object and image equations, in which relationships: n represents the number of lines per mm of the holographic grating produced at the laser wavelength λ_o from the recording of interference fringes generated by two source points C and D, respectively defined by their polar coordinates, relative to the top of the grating, as follows:

for the point $C\begin{cases} r_c=R/\rho_c \text{ and} \\ \eta \end{cases}$

for the point $D\begin{cases} r_D=R/\rho_D, \\ \delta \end{cases}$

and such that

$$\rho_c\sin\eta=\frac{\sin\alpha}{e}=V;\ \rho_D\sin\delta=\frac{\sin\beta}{e}=V',$$

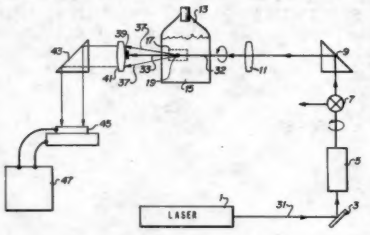
V and V' being constants which can be equal to one another, the intensity distribution of the resulting diffracted image being symmetrical.

4,623,252

PARTICULATE COUNTER

Keith E. Hollenbeck, Mountain View, Calif., assignor to Spectrex Corporation, Redwood City, Calif.

Filed Oct. 9, 1984, Ser. No. 658,770
Int. Cl.[4] G01N *15/02*
U.S. Cl. 356—338 **14 Claims**



1. An apparatus for detecting a particle within a vessel, comprising:

light generation means for generating a light beam and for relatively moving the beam and a particle located in a detection zone within the vessel;

detection means for receiving a scattered portion of the beam scattered by the particle and for generating a detection signal representing the scattered portion, and

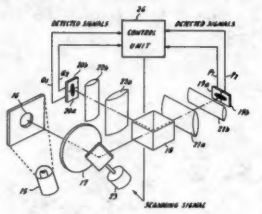
selection means, coupled to the detection means, for receiving the detection signal and for selecting a single maximum sample thereof occurring during a selected portion of the time period required for the particle to move through the light beam.

4,623,253

POSITION DETECTING APPARATUS

Norio Okutani, Neyagawa; Kenichi Matsumura, Yamatokoriyama, and Toshitsugu Inoue, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Dec. 16, 1983, Ser. No. 562,182
Claims priority, application Japan, Dec. 16, 1982, 57-221408
Int. Cl.[4] G01B *11/14*
U.S. Cl. 356—375 **4 Claims**



1. An apparatus for detecting an object, comprising:

(a) a source of light for illuminating the object;

(b) focusing means for focusing an image of said illuminated object;

(c) a beam splitter for dividing a beam of light emitted from said object indicative of the image thereof and passing through said focusing means into the beams of light each representing the image of the object;

(d) a pair of photodetectors responsive to said respective two beams of light for detecting the brightness of the object images focused thereon;

(e) a scanning means for one-dimensionally moving the images over said respective photodetectors, said scanning means being inclined with respect to said focusing means so that the images focused on said photodectors are inclined through an angle;

(f) first and second condensing means for condensing said divided two beams in first and second directions with respect to the image, respectively, said first direction being normal to said second direction; and

(g) control means for generating a scanning signal for driving said scanning means and for determining a two-dimensional position of said object on the basis of said scanning signal and detected signals from said photodectors.

4,623,254

METHOD AND APPARATUS FOR MEASURING THICKNESS OF A FILM

Kazuo Imose, Takarazuka, Japan, assignor to Teijin Limited, Osaka, Japan

Filed Dec. 14, 1982, Ser. No. 449,580
Claims priority, application Japan, Dec. 16, 1981, 56-201506
Int. Cl.[4] G01B *11/06*
U.S. Cl. 356—381 **8 Claims**

1. An apparatus for measuring a thickness of a high molecular film by the utilization of optical characteristics of the film, comprising:

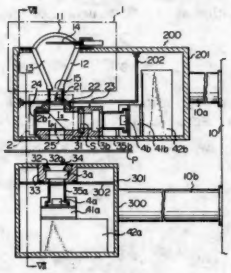
an upper head;

a lower head; and

a common support means for supporting thereon said upper and lower heads while heaving a space therebetween for permitting a sheet of measured film to be continuously conveyed therethrough without any contact with both said upper and lower heads;

said upper head comprising a light source means generating

an incident beam of light, an optical splitting means for splitting the incident beam of light into a reference beam of light and a measuring beam of light, a film holder for holding a reference film to be transmitted by said reference beam of light, a light collecting lens to bring said reference beam of light toward a first photoelectric converter, after said reference beam has been transmitted through said reference film, for generating a first electric signal corresponding to said reference beam of light, and a light projecting means having a port through which said measuring beam of light is projected onto said measured



film conveyed in said space between said upper and lower heads;

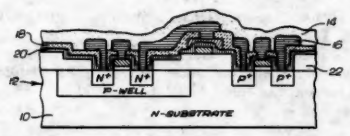
said lower head comprising a light receiving means for receiving said measuring beam of light after said measuring beam has been transmitted through said measured film and a second photoelectric converter for generating a second electric signal corresponding to said measuring beam of light coming from said light receiving means, said light receiving means including a light collecting means having a light receiving port 1.5 to 3.0 times larger than said port of said light projecting means and a light collecting lens.

4,623,255

METHOD OF EXAMINING MICROCIRCUIT PATTERNS

Stefan F. Suszko, Los Angeles, Calif., assignor to The United States of America as represented by the Administrator, National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 13, 1983, Ser. No. 541,526
Int. Cl.[4] G01B *11/00*
U.S. Cl. 356—389 **8 Claims**



7. A method of examining the microstructure of semiconductor devices such as LSIC and VLSIC devices having a plurality of layers of material formed by means of successive exposure of mask patterns in an overlapping fashion, comprising the steps of:

photographing an upper surface of a semiconductor device through a darkfield microscope to form a negative, said upper surface having a first layer of material formed by means of exposure of a first mask pattern;

selectively etching the semiconductor device to remove the first layer;

photographing the upper surface of the semiconductor device through a darkfield microscope to again form a negative, said upper surface having a second layer of material formed by means of exposure of a second mask pattern;

selectively etching the upper surface of the semiconductor device to sequentially remove additional layers of material;

photographing the upper surface of the semiconductor device through a darkfield microscope after the removal of each layer of material to form additional negatives, the upper surface in each photographing step having a layer of material formed by means of exposure of additional mask patterns;

inverse processing the negatives to form positives on photographic film, said positives containing images which substantially correspond to the mask patterns; and

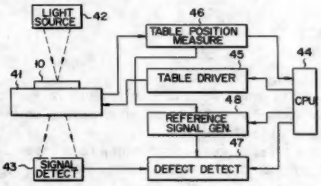
developing the film containing the positive images to form photographs.

4,623,256

APPARATUS FOR INSPECTING MASK USED FOR MANUFACTURING INTEGRATED CIRCUITS

Osamu Ikenaga, and Ryoichi Yoshikawa, both of Kawasaki, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 26, 1984, Ser. No. 674,652
Claims priority, application Japan, Nov. 24, 1983, 58-220980
Int. Cl.[4] G01B *11/00*
U.S. Cl. 356—394 **4 Claims**



1. An apparatus for inspecting a photomask for use in manufacturing large-scale integrated circuits, comprising:

an X-Y table on which a photomask having drawn thereon an integrated circuit chip pattern to be transferred onto a photoresist layer on a semiconductor wafer is placed, said photomask having a first area on which the integrated circuit chip pattern consisting of light transmitting and shielding portions is drawn, and second and third areas consisting only of one of a light transmitting portion and a light shielding portion with said second area disposed to surround said first area, and said third area disposed to surround said first and second areas, and said first and second areas of said photomask being adapted to expose said photoresist layer on said semiconductor wafer;

table driving means for moving said X-Y table along X and Y directions thereof;

position measuring means for measuring a position of said X-Y table;

light irradiating means for irradiating said photomask placed on said X-Y table with light;

photomask measuring means responsive to irradiation of said photomask with light for measuring said first and second areas of said photomask to provide a measured signal for each pixel of said first and second areas of said photomask;

reference signal providing means for providing a reference signal for each pixel of said first and second areas of said photomask, the reference signal including a binary design data signal representing each pixel of the integrated circuit chip pattern drawn on said first area of said photomask and an additional data signal having a predetermined logic level to represent each pixel of said second area of said photomask, said reference signal providing means including means for switching between the binary design data

signal and the additional data signal depending on whether a portion of said photomask being measured by said photomask measuring means is in said first area or said second area of said photomask; and

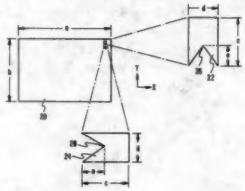
defect detecting means coupled to said photomask measuring means and said reference signal providing means for comparing the measured signal provided by said photomask measuring means with the reference signal provided by said reference signal providing means for each pixel of said first and second areas of said photomask to detect defects in said first and second areas of said photomask.

4,623,257

ALIGNMENT MARKS FOR FINE-LINE DEVICE FABRICATION

Mitchell D. Feather, Avenel, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 28, 1984, Ser. No. 687,125
Int. Cl.[4] G01B *11/00*
U.S. Cl. 356—401 **8 Claims**



1. A method of establishing and/or evaluating alignment in an integrated-circuit device fabrication sequence, said method comprising the steps of

viewing in a superimposed manner an alignment mark comprising an apex and an alignment mark comprising two spaced-apart parallel rectangles,

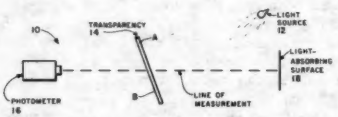
and detecting the deviation if any between the apex and a mid-point between said rectangles by directly viewing the position of said apex with respect to said rectangles.

4,623,258

METHOD FOR MEASURING HAZE IN TRANSPARENCIES

Harry L. Task, Dayton, and Louis V. Genco, Enon, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 22, 1984, Ser. No. 623,667
Int. Cl.[4] G01N *21/01*
U.S. Cl. 356—432 **10 Claims**



1. A method of measuring haze in a transparency, comprising the steps of:

(a) illuminating a first surface of a transparency from one side thereof using a source of light disposed in a predetermined angular relationship to a predetermined line of measurement through said transparency;

(b) measuring the illumination from said source at said first surface of said transparency;

(c) at a point along said predetermined line of measurement through said transparency and on the side opposite said one side, measuring the luminance of said transparency resulting only from said illumination of said first surface, whereby light traveling from said one side of said transparency along said predetermined line of measurement and through said transparency is excluded to ensure that the luminance being measured results only from scattered light; and

(d) calculating a haze index of said transparency by solving for H_f:

$$H_f = L/E$$

where:

H_f = haze index of said transparency,

L = luminance of said transparency resulting from said illumination of said first surface, and

E = illumination at said first surface of said transparency.

4,623,259

TIDE TIMER

E. Ernest Oberst, 404 Patton Dr., Cheshire, Conn. 06510

Filed Jan. 14, 1985, Ser. No. 691,151
Int. Cl.[4] G04B *19/26*
U.S. Cl. 368—19 **19 Claims**

1. A tide timer, providing a case, a tidal disc mounted in said case for rotation about its center axis, a timepiece for driving said disc at a uniform rate of one revolution during a whole number of tide time cycles, a face plate on said case in cover relation with said disc and having a longitudinal window with opposite ends denoting high and low water levels, respectively, with said window being disposed to one side of said center axis and extending lengthwise radially of said disc, and said disc bearing a symmetrical figure of an outline plotted to appear in said window as a rising and falling water level moving therein at a substantially uniform rate from one end to the other end and back to the one end thereof on its passage across said window on the drive of said disc during each of successive tide time cycles.

4,623,260

ELECTRONIC TIMEPIECE WITH A CHRONOGRAPH SYSTEM

Yasuo Kamiyama, Tanashi, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Sep. 17, 1985, Ser. No. 777,018
Claims priority, application Japan, Sep. 18, 1984, 59-195483
Int. Cl.[4] G04B *19/04*; G04F *8/00*
U.S. Cl. 368—80 **6 Claims**

1. An electronic timepiece with a chronograph system having second, minute and hour hands, a chronograph minute hand and a chronograph hour hand, comprising:

a standard oscillator for producing standard pulses;

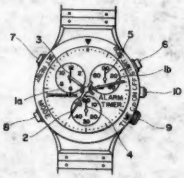
a frequency divider for dividing the standard pulses into first pulses having a low frequency and second pulses having a high frequency;
a first motor for driving the second hand;
a second motor for driving the minute hand and hour hand;
driver means responsive to the first and second pulses for driving the first and second motors;
a gear train for transmitting the output of the first motor to the second hand, chronograph minute hand, and chronograph hour hand;
a resetting mechanism for resetting the chronograph minute hand and chronograph hour hand to respective zero positions;
first circuit means responsive to the second pulses for operating the first motor to reset the second hand to the zero position;
second circuit means for starting and stopping the first motor;
external manipulating means for operating the resetting mechanism, first and second circuit means and for changing a normal time display mode to a chronograph time display mode.

4,623,261

ELECTRONIC TIMEPIECE WITH A CHRONOGRAPH SYSTEM

Takeo Muto, Tanashi, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Sep. 25, 1985, Ser. No. 780,024
Claims priority, application Japan, Sep. 26, 1984, 59-145384; Sep. 29, 1984, 59-205383
Int. Cl.[4] G04B *19/04*; G04F *8/00*
U.S. Cl. 368—80 **6 Claims**



1. An electronic timepiece with a chronograph system having a minute hand, and hour hand, a first chronograph second hand, a chronograph minute hand and a chronograph hour hand, comprising:
a first motor for driving the first chronograph second hand;
a first gear train for transmitting the output of the first motor to a second wheel of the first chronograph second hand;
a second gear train for transmitting the rotation of the chronograph second wheel to a minute wheel of the chronograph minute hand;
a third gear train separately provided from the second gear train and provided for transmitting the rotation of the chronograph second wheel to an hour wheel of the chronograph hour hand.

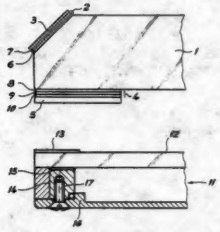
4,623,262

TIMEPIECE HAVING A TRANSPARENT ELEMENT PARTIALLY COVERED BY A COATING

Paul Gogniat, and Eric Loth, both of Bienne, Switzerland, assignors to Montres Rado S.A., Lengnau B. Biel, Switzerland

Filed Jun. 29, 1983, Ser. No. 508,919
Claims priority, application Switzerland, Jul. 9, 1982, 4183/82
Int. Cl.[4] G04B *37/00*
U.S. Cl. 368—294 **32 Claims**

1. A timepiece comprising:
a first transparent element visible from the outside of the timepiece, said first transparent element including an inner and an outer surface;
an inner adherent lining applied to at least part of said inner surface;
a layer of high temperature soldering material atached to said inner adherent lining for securing said crystal to a second element;



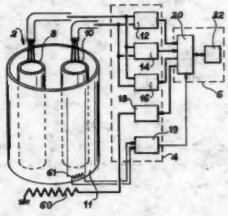
an outer adherent lining applied to at least part of said outer surface; and
a decorative outer coating formed of a hard scratch-resistant material attached to and covering said outer adherent lining for masking said inner adherent lining and said layer of soldering material.

4,623,263

APPARATUS FOR THE THERMAL MEASUREMENT OF THE TEXTURE OF A POROUS BODY

Paul Barberi, Le Mesnil St. Denis; Pierre Bergez, Paris; Maurice Brun, Lyons; Michel Chevalier, Montlhery; Charles Eyraud, Lyons, and Jean-Francois Quinson, Meyzieux, all of France, assignors to Commissariat a l'Energie Atomique and Centre Nationale de la Recherche Scientifique, both of Paris, France

Filed Nov. 1, 1984, Ser. No. 667,347
Claims priority, application France, Sep. 26, 1984, 84 14792
Int. Cl.[4] G01N *25/20, 15/08*
U.S. Cl. 374—33 **13 Claims**



1. An apparatus for thermal measurement of the texture of a porous body subjected to thermal gradients, having a measuring head, a measuring assembly and a processing and control means, said measuring head being provided with two identical low inertia cylindrical cells, including a measuring cell and a reference cell wherein at least one of said two cells are in contact with said porous body and, wherein the measuring assembly comprises:
a mean temperature measuring means for measuring the mean temperature of the measuring cell, while said porous body is subject to said temperature gradient and before said porous body reaches thermal equilibrium said mean temperature measuring means delivering a signal to the processing and control means in order to calculate the radius and shape of pores under examination;
a calorific effect measuring means for measuring a calorific

effect in the measuring cell, said calorific effect measuring means delivering a signal to the processing and control means in order to calculate the pore volume, said calorific effect measuring means comprising a calorific effect detection means and an electrical calibration means; and

a temperature regulation means comprising a furnace for heating said measuring head and a cryostat for cooling said measuring head.

4,623,264

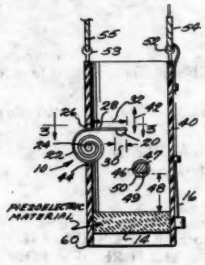
TEMPERATURE SENSING USING ULTRASONIC SYSTEM AND MOVABLE TARGET

Thomas Mitchell, Richardson, Tex., assignor to Southland Corporation, Dallas, Tex.

Filed Apr. 26, 1985, Ser. No. 727,911

Int. Cl.[4] G01N *29/02*; G01K *11/22*; G01F *23/28*

U.S. Cl. 374—117 **21 Claims**



1. A fluid temperature sensing apparatus comprising:

(a) transmitting and receiving transducer means for emitting and receiving sound pulses;

(b) a first target for reflecting sound pulses emitted by the transducer means;

(c) temperature responsive means affixed to said first target for moving the target in response to temperature changes in the fluid; and

(d) means for mounting said temperature responsive means at a predetermined distance from said transducer means so that said target moves toward and away from said transducer means in response to changes in temperature in the fluid.

4,623,265

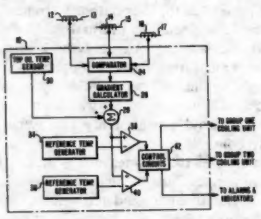
TRANSFORMER HOT-SPOT TEMPERATURE MONITOR

Thomas D. Poyser, McCandless Twp., Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 26, 1984, Ser. No. 654,624

Int. Cl.[4] G01K *1/12*

U.S. Cl. 374—152 **4 Claims**



1. A hot-spot temperature apparatus for determining the hot-spot temperature of a transformer, wherein the transformer is adapted for connection to a power source and wherein the transformer includes a magnetic core, electrical winding means disposed in inductive relation with the magnetic core for establishing a magnetic flux therein, said winding means having one or more phase windings, and a cooling system for circulating a coolant, said hot-spot temperature apparatus comprising:

means for determining the phase winding having the largest current in the electrical winding means and for producing a signal representative thereof;

means responsive to said signal for deriving a first value representing an average hot-spot temperature rise over an average top-oil temperature at a rated current of said transformer by using a predetermined relationship between the average hot-spot temperature rise over the average top-oil temperature at the rated current of said transformer wherein said first value is a function of the largest current in the electrical winding means;

means for calculating a temperature gradient, wherein said temperature gradient is a function of said first value;

means for determining coolant temperature at a preselected location proximate the top portion of said coolant; and

means for adding said temperature gradient and said coolant temperature for determining the hot-spot temperature.

4,623,266

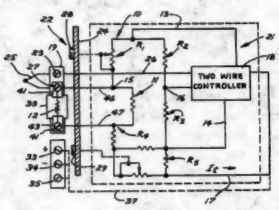
COLD JUNCTION COMPENSATION FOR THERMOCOUPLE

John A. Kielb, Eden Prairie, Minn., assignor to Rosemount Inc., Eden Prairie, Minn.

Filed Sep. 24, 1985, Ser. No. 779,514

Int. Cl.[4] G01K *7/12*

U.S. Cl. 374—181 **9 Claims**



1. In a two wire transmitter having a thermocouple input, and resistance means for cold junction compensation thereof, said two wire transmitter having a transmitter housing with two compartments, a first of said compartments mounting electronic components, and a second of said compartments housing terminal block means having a thermally responsive cold junction terminal for connection of a lead of a thermocouple, the improvement comprising:

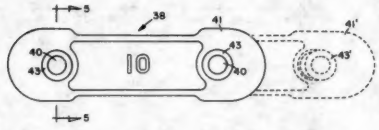
a cold junction compensation means forming part of the resistance means and having a thermal response substantially matched to the thermal response of the cold junction terminal, a resistor of said resistance means mounted on a block of heat conductive material, said block of heat conductive material being located in said second compartment, and means for mounting the cold junction compensation means in the second compartment and electrically connecting said resistor means to the rest of the resistance means in the first compartment of the housing.

4,623,267

ELASTOMERIC BEARING SYSTEM

Larry F. White, Denver, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed Jan. 17, 1984, Ser. No. 571,621
Int. Cl.[4] F16C *27/02*
U.S. Cl. 384—125 2 Claims



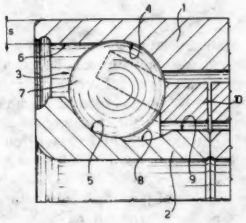
1. A tension biasing means adapted to be stressed by a force supplying member which is relatively hard compared to the elastomeric material forming the tension biasing means, comprising: An elongated elastomeric mass, a pair of spaced bores penetrating the elastomeric mass and adapted to receive the force supplying member within the bores, and a layer of silicone rubber positioned against the inner surface of the bores adapted to be interposed between the elastomer mass and force supplying member, the silcone rubber layer serving as a bearing to distribute stresses and protect the elastomeric mass from abrasion and cracking, and wherein the silicone rubber bearing is provided with flanges which matingly engage corresponding recesses in the elastomer mass for self-retention therewith.

4,623,268

BALL BEARING

Giovanni Pollastro, Turin, Italy, assignor to Riv-Skf Officine Di Villar Perosa S.p.A., Turin, Italy

Filed Apr. 10, 1985, Ser. No. 721,691
Claims priority, application Italy, Apr. 13, 1984, 53261/84[U]
Int. Cl.[4] F16C *19/06*
U.S. Cl. 384—511 2 Claims



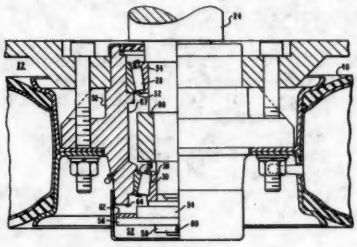
1. In a ball bearing comprising an outer ring having an axis, a first inner ring and a first row of balls arranged therebetween, said outer ring having a first outer rolling track for guiding said balls of said first row and said first inner ring having an inner rolling track for guiding said balls of said first row, said first outer rolling track and said inner rolling track having curved profiles in a radial plane perpendicular to said axis, the line connecting the midpoint of said first outer rolling track profile and the center of said balls being disposed at a first predetermined angle relative to said axis and the line connecting the midpoint of said inner rolling track profile and the center of said balls being disposed at a second predetermined angle relative to said axis, said inner ring further having an annular groove formed on one side of said inner rolling track, the minimum diameter of said annular groove being less than the minimum diameter of said inner rolling track, and said outer ring further having a substantially cylindrical seat formed on one side of said first outer rolling track, the diameter of said seat being less than the maximum diameter of said outer rolling track, the improvement wherein said inner ring further has a substantially cylindrical surface contiguous with said annular groove, the diameter of said substantially cylindrical surface of said first inner ring being greater than said minimum diameter of annular groove.

4,623,269

WHEEL BEARING PROTECTION APPARATUS

Thomas J. Burg, West Homestead, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 22, 1985, Ser. No. 757,716
Int. Cl.[4] F16C *19/38, 19/52*
U.S. Cl. 384—548 6 Claims



1. In transit vehicle apparatus for supporting a vehicle guide wheel generally in a horizontal plane relative to a vertically extending stationary vehicle shaft, the combination of:

first bearing means coupled between a hub of said guide wheel and said stationary shaft for providing support of said wheel against horizontally directed forces and gravitational forces;

second bearing means coupled with said stationary shaft for providing horizontal support of said wheel hub upon failure of said first bearing means, and

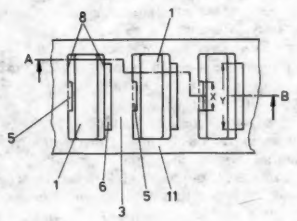
separate thrust bearing means coupled with said shaft for providing upward vertical support of said wheel hub upon failure of said first bearing means.

4,623,270

POCKET CAGE FOR ROLLING BEARING

Armin Olschewski, Schweinfurt; Bernhard Bauer, Hassfurt; Hilmar Leuner, Üchtelhausen, and Herbert Dobhan, Bergrheinfeld, all of Fed. Rep. of Germany, assignors to SKF GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Jun. 7, 1985, Ser. No. 742,727
Claims priority, application Fed. Rep. of Germany, Jul. 8, 1984, 3424741
Int. Cl.[4] B21D *53/12;* F16C *19/26, 33/20*
U.S. Cl. 384—576 4 Claims



1. In a pocket cage for a rolling bearing made in a mold with single-piece, radially movable sliders, the cage comprising two side rings connected by a plurality of webs, each of said webs

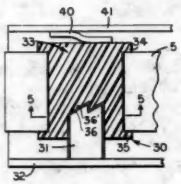
having a first projection for retaining a rolling element in a pocket in a radial direction, said first retaining projection projecting into said pocket at the circumferential outer surface of said web and extending along only a portion of the length of said web, said first retaining projection being provided on one side of each web and a first recess being provided on the opposite side of each web, the improvement wherein said first retaining projection is arranged to deflect in a substantially circumferential direction as the radially movable slider which molds said first retaining projection is radially outwardly removed from said pocket, said cage being made of material having low deformability, and the length of said first recess being sufficiently greater than the length of said first retaining projection such that said web undergoes elastic deformation as said slider is removed.

4,623,271

INK RIBBON CARTRIDGE FOR A PRINTER INCLUDING MEANS FOR TRANSVERSELY DISPLACING AND ADVANCING THE INK RIBBON IN THE CARTRIDGE

Kenneth Kress, Huntington, N.Y., assignor to Primages Inc.

Filed May 14, 1984, Ser. No. 609,784
Int. Cl.[4] B41J *32/00*
U.S. Cl. 400—208 **12 Claims**



1. An ink ribbon cartridge comprising a storage reel for an ink ribbon, a take-up reel for the ink ribbon, means for longitudinally advancing the ink ribbon from the storage reel to the take-up reel, and means supported by the cartridge for transversely displacing the ribbon during its longitudinal advance including a fixed member, a pulley with an axial opening rotatably receiving the fixed member, said ribbon passing on said pulley to rotate the pulley during longitudinal advance of the ribbon, said fixed member having an end cam surface, the pulley having a corresponding cam surface facing and engaging the cam surface on the fixed member, said cam surfaces respectively including a plurality of peaks and an inclined surface between successive peaks to produce a saw-tooth path of travel of the ribbon as the ribbon advances on said pulley.

4,623,272

MECHANISM FOR MOUNTING INK RIBBON CASSETTE

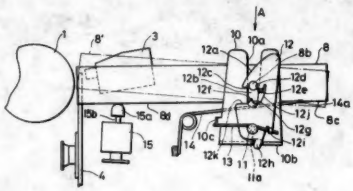
Hiroatsu Kondo, Zushi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 15, 1983, Ser. No. 561,934
Claims priority, application Japan, Dec. 17, 1982, 57-220220
Int. Cl.[4] B41J *32/00*
U.S. Cl. 400—208 **4 Claims**

1. A mechanism for mounting an ink ribbon cassette containing therein an ink ribbon and having an engaging part on a wall surface thereof, said mechanism comprising:

(a) guide means for guiding an ink ribbon cassette in a predetermined direction to a predetermined position; and

(b) engaging and holding means for engaging with said engaging part of said ink ribbon cassette to hold said engaging part at said predetermined position when said ink ribbon cassette is shifted in said predetermined direction to said predetermined position; said engaging and holding means releasing the engagement with said engaging part when said ink ribbon cassette is further shifted in said predetermined direction, and including means for



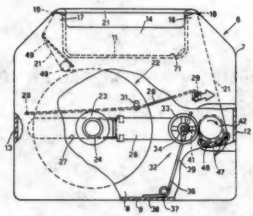
urging said ink ribbon cassette in the direction opposite to said predetermined direction when said engaging part is so released.

4,623,273

CARTRIDGE FOR A RIBBON FOR TYPEWRITERS

Josè Gubau, Spagnola, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Turin, Italy

Filed Apr. 13, 1984, Ser. No. 599,796
Claims priority, application Italy, Apr. 13, 1983, 53197/83[U]
Int. Cl.[4] B41J *32/00*
U.S. Cl. 400—208 **3 Claims**



1. A printing ribbon cartridge for a printing machine comprising a container of substantially parallelepipedal form having a back, a front wall, a rear wall, a right side wall, a left side wall, and a cover, and two arms projecting from the rear wall, wherein each arm has an aperture for the passage of a portion of printing ribbon outside the container, wherein a feed spool having a core, a take-up spool and a feed roller having a series of pin teeth are supported rotatably in the container, and wherein another portion of printing ribbon winds on the feed spool and the take-up spool, wherein the back of said container has a guide slot substantially parallel to the rear wall and a bearing support, a shoulder and a stud all projecting toward said cover internally to the container, wherein a single support is housed and slidable in said guide support and comprises a first collar about which is rotatable said feed spool, a second collar about which is rotatable said take-up spool and a fixed pin, and wherein said first and second collars and said pin project from the single support toward said cover internally to the container and are disposed at the ends of the single support and wherein said fixed pin is disposed adjacent to said second collar, further comprising spring means having a buffer function for controlling the unwinding of the printing ribbon from the feed spool towards the aperture of one of said two arms, guide means having a form of cylindrical sector to convey the printing ribbon from the aperture of another of said two arms to said feed roller and to the take-up spool and wherein said cylindrical sector comprises semi-cylindrical ribs for reducing the surfaces of contact with the printing ribbon, a first wire spring supported at one end in the support bearing and bearing against said shoulder to have a portion disposed substantially parallel and along said guide slot and a second wire spring

seated on the stud having one end bearing against the front wall and another end bearing against the fixed pin of said single support, wherein said shoulder preloads said first wire spring for cooperating with the core of the feed spool to prevent casual rotation of the feed spool and therefore the unwinding of the printing ribbon and simultaneously exerts a friction action during the normal unwinding of the feed spool, and wherein said second wire spring biases the single support towards the right side wall and keeps the take-up spool bearing with the outer surface of the printing ribbon against the series of pin teeth of the feed roller.

4,623,274

INK RIBBON CARTRIDGE

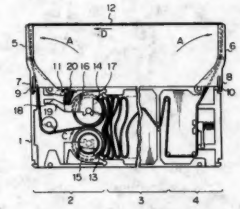
Ryouhei Ohsaki, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Apr. 23, 1985, Ser. No. 726,388

Claims priority, application Japan, Apr. 23, 1984, 59-58533

Int. Cl.[4] D41J *32/02*

U.S. Cl. 400—208 **5 Claims**



1. An ink ribbon cartridge comprising:

(a) a cartridge case having a storage space;

(b) a pair of spaced ribbon guide arms pivotally mounted on said cartridge case, one of said ribbon guide arms having a rear end projecting into said cartridge case;

(c) an endless ink ribbon stored in said storage space and having a portion extending through and between said ribbon guide arms;

(d) a feed roller drivably mounted in said cartridge case;

(e) a roller guide pivotally mounted in said cartridge case and having a hook engageable by said rear end of said one ribbon guide arm;

(f) a pressure roller rotatably mounted on said roller guide and movable toward and away from said feed roller in response to angular movement of said roller guide; and

(g) a spring acting between said roller guide and said cartridge case for normally urging said pressure roller toward said feed roller;

(h) said ribbon guide arms being angularly movable between an open position in which said rear end disengages from said hook to allow said pressure roller to be displaced toward said feed roller under the force of said spring for gripping said ink ribbon and feeding the same into said storage space in response to rotation of said feed roller, and a closed position in which said rear end engages said hook to cause said pressure roller to be displaced away from said feed roller against the force of said spring to release said ink ribbon from said feed and pressure rollers.

4,623,275

SHIFTING MECHANISM FOR A SINTERED-BODY PLATEN IN A DOT-MATRIX IMPACT PRINTER

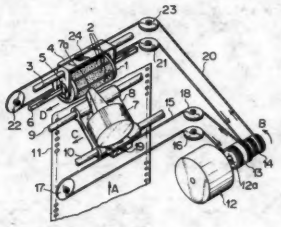
Susumu Hanyu; Hideaki Takenoya, both of Tokyo, and Fumiyuki Mishima, Hino, all of Japan, assignors to Janome Sewing Machine Co., Ltd., Tokyo, Japan

Filed May 16, 1984, Ser. No. 610,872

Claims priority, application Japan, May 27, 1983, 58-92427

Int. Cl.[4] B41J *27/06, 3/12*

U.S. Cl. 400—662 **3 Claims**



1. A printing mechanism of a dot impact-type printer, comprising a platen movable in a printing direction along a predetermined printing line at one side of a printing paper; a printing head arranged for movement in said printing direction along the printing line at the opposite side of the paper, said platen provided on its jacket with a plurality of elongated, ink impregnated sintered elements each extending parallel to said printing line and each extending substantially over the entire length of said platen, said printing head imparting through the paper dot impacts against one of said elongated ink impregnated sintered elements to print characters on the paper during its movement; drive means including first rotational means coupled to said platen to move the same in said printing direction at a first predetermined speed, and second rotational means coupled to said printing head to move the same in said printing direction at a second predetermined speed.

4,623,276

PORTABLE LECTERNS

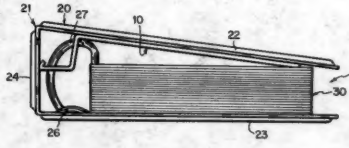
Ross Kinneir, Bristol, England, assignor to Bensons International Systems, Limited, Gloucestershire, England

Filed Jun. 11, 1985, Ser. No. 743,248

Claims priority, application United Kingdom, Jul. 21, 1984, 8418654

Int. Cl.[4] B42F *13/00, 13/40;* **B42D** *3/00;* **A47B** *23/00*

U.S. Cl. 402—80 R **22 Claims**



1. A portable lectern comprising:

means for releaseably retaining a plurality of sheet members; and

a separate base member configured and dimensioned for standing in a stable manner on a relatively flat surface, said base member comprising a generally planar section having front and back portions and which is inclined with respect to the flat surface so that the front portion does not contact the flat surface and means for supporting said sheet member retaining means in a predetermined position for viewing the sheet members to facilitate reading or lecturing therefrom, said supporting means attached to

and extending generally perpendicularly along at least part of said front portion of said generally planar section; said base member being configured and dimensioned to be selectively removable combinable with said sheet member retaining means to facilitate portability of same for transport and storage.

4,623,277

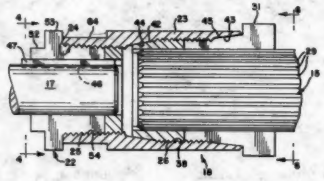
SELF-TIGHTENING SHAFT COUPLER

Alex Wayne, Lexington, Tenn.; Dennis W. Bintner, Des Moines, Iowa, and Mark H. Bartel, Lexington, Tenn., assignors to Delavan Inc., West De Moines, Iowa

Filed May 1, 1985, Ser. No. 729,549

Int. Cl.⁴ F16B *2/02*

U.S. Cl. 403—314 **20 Claims**



1. A coupler for joining a pair of rotatable shafts in generally axial alignment, comprising:

an elongate coupler member;

a collet at one end of said coupler member in threaded engagement therewith having an interior recess for receiving and engaging one of the shafts to join said coupler member thereto; and

engaging means at the other end of said elongate coupler member for engaging the remaining one of the shafts to join said coupler member thereto, whereby the shafts are coupled to one another through said coupler member, said engaging means including threaded means for engaging said engaging means with said coupler member, the threaded engagement of said collet and said threaded means being such that rotation of one of said shafts in a predetermined direction tends to further engage said collet and said engaging means with the coupler member.

4,623,278

ANTI-BACKLASH DEVICE

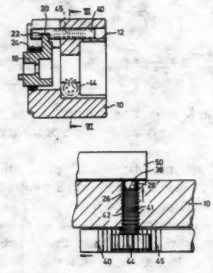
Ronald W. Merrell, Banbury, England, assignor to Leslie Hartridge Ltd, Buckingham, England

Filed Apr. 30, 1985, Ser. No. 728,948

Claims priority, application United Kingdom, Apr. 30, 1984, 8411025

Int. Cl.⁴ F16B *7/00*; F16H *27/03*

U.S. Cl. 403—362 **1 Claim**



1. An anti-backlash connecting member for use in connecting a rotary drive to a drive shaft, especially but not exclusively the drive shaft of a fuel injection pump, comprising:

(a) a hub member;

(b) at least one fixing pin arranged to be moveable within said hub member transversely of the hub axis;

(c) an abutment end of said fixing pin which is brought into contact with an end portion of such a shaft when the device is in use;

(d) a screwthreaded engagement between said hub member and said fixing pin;

(e) a pinion which is provided on said fixing pin and which serves to rotate said fixing pin;

(f) a rack which engages said pinion; and

(g) spring loading means which urges said rack in a direction which rotates said fixing pin in the sense that brings about contact between said abutment end and an end portion of such a shaft by virtue of said screwthreaded engagement.

4,623,279

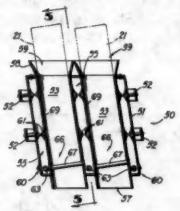
PREHEATER FOR ROAD STRIPE APPLICATORS

Martin A. Smith, Atlanta, Ga., assignor to Pave-Mark Corporation, Atlanta, Ga.

Filed Jul. 16, 1984, Ser. No. 631,325

Int. Cl.⁴ E01C *23/16*

U.S. Cl. 404—93 **3 Claims**



2. Apparatus for melting slabs of thermoplastic marking materials preparatory to applying melts therefrom onto a paved surface, and with said apparatus comprising a combustion gas flow chamber, wheel means for movably supporting said combustion chamber upon a selected ground plane, a pair of tubular receivers mounted side by side within said chamber with each receiver having a side support wall oriented between approximately 70° and 82° with respect to said ground plane; and means for introducing combustable gases into said combustion gas flow chamber for combustion to heat said pair of receivers and which comprises a central fire tube mounted within said chamber between said pair of receivers and a pair of fire tubes mounted within said chamber straddling said pair of receivers.

4,623,280

PAVEMENT MARKER APPLICATOR

Heinrich F. Stenemann, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 25, 1985, Ser. No. 727,337

Int. Cl.⁴ E01C *23/16*

U.S. Cl. 404—94 **19 Claims**

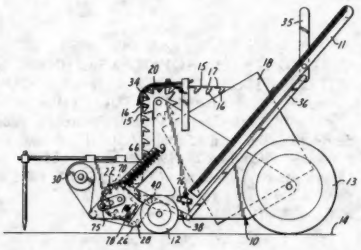
1. Applicator which mechanically applies pavement markers, each having a substantially flat base which is to be adhered to pavement and is releasably adhered to a flexible carrier web, there being uniform spacing between the pavement markers along the carrier web, said applicator comprising:

a stripper bar positioned close to the pavement and having a substantially horizontal upper face and a small-radius trailing edge;

means for directing the carrier web sequentially across said upper face, around said small-radius edge, and to takeup means;

means for back tensioning the carrier web;

reciprocating means for intermittently advancing the stripper bar and carrier web toward the rear of the applicator and then allowing the stripper bar to be retracted to its original position;



indexing means for positioning one marker after each intermittent advance and retraction of the stripper bar so that its base rests on the carrier web above said upper face; and

means for pressing the substantially flat base of said one marker against the pavement when that marker is advanced beyond the small-radius edge during the next advancing movement of the reciprocating means.

4,623,281

OPEN-MESH FABRIC

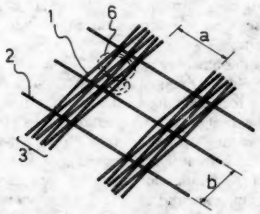
Germain Verbauwhede, and Roger Vanassche, both of Zwevegem, Belgium, assignors to N.V. Bekaert S.A., Zwevegem, Belgium

Filed Jul. 26, 1984, Ser. No. 634,568

Claims priority, application Netherlands, Aug. 2, 1983, 8302739

Int. Cl.[4] E02B *3/12;* **D03D** *15/02*

U.S. Cl. 405—19 **19 Claims**



1. A dimensionally stable, flexible and open-mesh woven fabric, comprising:

a plurality of interwoven warp and weft elements comprised of thread-like elements, wherein the warp elements are arranged in groups comprising a plurality of warp elements extending parallel to one another with each warp element extending sinusoidally so that it alternately extends over and under the weft elements, said weft elements being axially movable with respect to said groups of warp elements, wherein said groups are spaced apart from each other and the distance between each two successive groups as well as the distance between each two successive wefts is between about 0.8 cm and 6 cm, and wherein the number of warp elements in said groups and said spacing are selected so that the clamping force of a group of the warp elements on the weft elements is such that an axial movement of the weft elements occurs only in the case of an axial tensile loading of at least about 1% of the breaking strength of the weft elements.

4,623,282

LOCATING ELEMENTS OF CONSTRUCTION BENEATH THE SURFACE OF EARTH SOILS

Gordon H. Allen, 1000 Lorraine Rd., #505, Wheaton, Ill. 60187

Filed Dec. 12, 1984, Ser. No. 680,961

Int. Cl.[4] F16L *57/00;* **G01D** *21/00*

U.S. Cl. 405—157 **14 Claims**

1. In an area of earth soil which carries beneath the surface thereof at least one underground facility and a frangible colored body beneath the surface and located above and overlying the underground facility, the frangible body having a coloring coded to the type of facility and printing identifying the type of facility, the improvement wherein the frangible colored body comprises:

a sheet of clear plastic film having printing indicia in the form of a cautionary phrase on the film lower, inner face visible through the film upper, outer face, the printing indicia identifying the type of underground facility;

a sheet of flexible metal foil bonded to the plastic film lower, inner face, the metal foil having a plurality of color coded striped indicia on the foil upper, inner face, each of the color coded striped indicia having a color coded to correspond to the type of underground facility and being visible through the plastic film upper, outer face; and

a plurality of light reflective stripes on the foil upper, inner face being visible through the plastic film upper, outer face, and contrasting with the color coded striped indicia and with the surrounding earth soil to provide high visibility of said frangible body under a variety of earth soil color conditions.

4,623,283

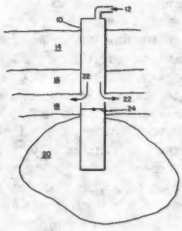
METHOD FOR CONTROLLING WATER INFLUX INTO UNDERGROUND CAVITIES

Ju-Nam Chew, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 13, 1984, Ser. No. 620,297

Int. Cl.[4] C09K *17/00*

U.S. Cl. 405—270 **11 Claims**



1. A method for minimizing the intrusion of water into a mined cavity in a subterranean formation which is overlain by a semi-permeable layer of shaly sand or other similar material

above which layer is the water-bearing source layer comprising:

(a) inserting a means for placing a fluid just below the semi-permeable layer; and

(b) placing the fluid, with a density less than that of water, just below the semi-permeable layer which fluid via physical means only displaces water in the semi-permeable layer and is trapped below said layer thereby creating by physical means only a barrier to the entry of water into the mined cavity.

4,623,284

MILLING CUTTER

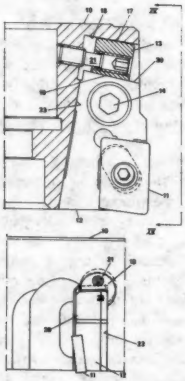
Hermann A. Greiff, Fagersta, Sweden, assignor to Seco Tools AB, Sweden

Filed Jun. 27, 1985, Ser. No. 749,395

Claims priority, application Sweden, Jul. 5, 1984, 8403567

Int. Cl.⁴ B26D *1/00*

U.S. Cl. 407—38 **14 Claims**



1. A milling cutter comprising a cutter body, a plurality of supporting surfaces on said cutter body at least one shoe carrying a cutting insert, said shoe being adjustably secured to at least one of said supporting surfaces on said cutter body, adjustment means adjusting the position of the shoe in the cutter body to vary the extent of projection of the cutting insert from the cutter body, said adjustment means having a supporting surface resting against a corresponding at least one of said supporting surfaces on the cutter body and a wedge face resting against a corresponding wedge face on the shoe, and clamping means clamping the shoe in an adjusted position, the supporting surface of the adjustment means being generally curved, a sector of a circle generally formed by said curved supporting surface having an included angle larger than 180°, the adjustment means bridging an inner corner on the shoe, said adjustment means abutting the shoe from two sides and being arranged for turning within the cutter body.

7. A milling cutter comprising a cutter body, a plurality of supporting surfaces on said cutter body at least one shoe carrying a cutter insert, said shoe being adjustably secured to said cutter body, adjustment means for adjusting the position of the shoe in the cutter body to vary the extent of projection of the cutting insert from the cutter body, said adjustment means having a supporting surface engaging at least one of said supporting surfaces on said cutter body, a second supporting surface resting against a corresponding wedge face on the shoe, and clamping means clamping the shoe in an adjusted position, the clamping means comprising an elongated pin which is displaceably arranged in a bore in the shoe at the outer end thereof, and a clamping screw which is screwed in the shoe and is movable generally transversely relative to the longitudinal direction of the pin, said clamping screw having a conical portion cooperating with the end surface of the pin, whereby the pin upon actuation by the clamping screw clamps the shoe against at least one of said supporting surfaces on the cutter body, said one of said supporting surfaces being opposed to the pin and extending in the longitudinal direction of the shoe.

4,623,285

CUTTING TIP FOR ROTARY MACHINING, A TOOL FITTED WITH SUCH TIPS AND A PROCESS FOR SHARPENING SUCH TIPS

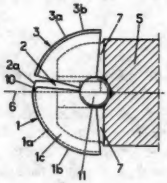
Marcel Costil, Cormeilles en Parisis, France, assignor to Atelier de Rectification et d'Affutage A.R.A.F., Poissy, France

Filed Jun. 29, 1984, Ser. No. 626,321

Claims priority, application France, Jul. 1, 1983, 83 10990

Int. Cl.⁴ B26D *1/00*

U.S. Cl. 407—41 **7 Claims**



1. A removable cutting tip for a rotating cutting tool incorporating a tool-holder with a spherical part,

said cutting tip comprising

a flat-sided sector of an annulus having

a radially inner surface corresponding to the inner arc of the annulus and machined into a segment of a cylinder adapted for being in contact with a said spherical part of a said tool holder, and having

a radially outer surface corresponding to the outer arc of the annulus machined into a segment of a cone with an arcuate cutting edge corresponding to the arc of greatest radius of said segment of a cone at the edge where it meets one said flat side.

4. A tool comprising

a tool-holder driven in rotation about an axis and having means for receiving a set of cutting tips, said tool-holder having a spherical part centered on its axis of rotation, and

a set of cutting tips, each of which is a flat-sided sector of an annulus with an inner surface corresponding to the inner arc of the annulus and machined into a segment of a cylinder of the same radius as and in contact with said spherical part, and having an outer surface corresponding to the outer arc of the annulus and machined into a segment of a cone with an arcuate cutting edge corresponding to the arc of greatest radius of said segment of a cone, where it meets one flat side, said spherical part receiving the tips, and

clamping means for immobilizing said tips with the inner arc of said tips in contact with said spherical part.

4,623,286

BORING BAR AND MEASURING DEVICE THEREFOR

Dale Hitt, 20850 Westhaven, Southfield, Mich. 48075

Continuation of Ser. No. 469,293, Feb. 24, 1983, abandoned. This application Jul. 8, 1985, Ser. No. 753,361

Int. Cl.⁴ B23B *25/06*

U.S. Cl. 408—116 **9 Claims**

1. A boring bar assembly comprising in combination:

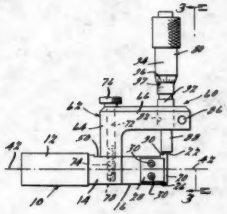
a rotatable boring bar having a planar and flat bar gaging surface formed integrally on the external periphery of said rotatable boring bar and rotatable therewith, and a cutting

tool releasably secured thereto for rotation therewith, said cutting tool having a cutting tip thereon lying in a reference plane defined by said cutting tip and the rotational center line of said boring bar, said flat bar gaging surface being integrally and fixedly oriented in a substantially perpendicular relationship with said reference plane;

adjustment means for selectively presetting and for movably altering the radial position of said cutting tip relative to said rotational center line;

measuring means for measuring said radial position of said cutting tip, said measuring means including a frame member having a single planar flat frame member gaging surface thereon and a measuring member having a generally flat and planar measuring surface thereon, said flat and planar measuring surface being abuttable with said cutting tip in order to measure said radial position thereof, said measuring member being connected to said frame member for movement relative thereto in a direction such that said flat measuring surface is substantially parallel to a plane containing said flat frame member gaging surface regardless of the position or movement of said measuring member relative to said frame member;

attachment means for releasably fixing said frame member to said boring bar such that said flat bar gaging surface and said flat frame member gaging surface are in a generally flush and flat mutual engagement with one another, said flat bar gaging surface and said flat frame gaging surfaces being located and oriented relative to said boring bar, to said cutting tip, and to said reference plane such that said generally flat and planar measuring surface is subtantially



perpendicular to said reference plane when said flat bar gaging surface and said flat frame gaging surface are in said flush and flat mutual engagement regardless of the position or movement of said measuring member relative to said frame member and regardless of the rotational position of said boring bar, said radial position of said cutting tip thereby being accurately presettable and adjustable to a desired radial position relative to said rotational center line by positioning said measuring surface at said desired radial position and moving said cutting tip to abut said measuring surface regardless of the rotational position of said boring bar, said attachment means further establishing the longitudinal positioning of said measuring means with respect to the said axis of rotation of said boring bar whereby said measuring means will be positioned at a given longitudinal position each time said measuring means is fixed to said boring bar;

said frame member of said measuring means being of a one-piece generally L-shaped configuration having first and second integral legs generally perpendicular to each other, said first leg extending in a lateral direction perpendicular to the rotational center line of the boring bar and said second leg extending in a longitudinal direction parallel to the rotational center line of the boring bar when said frame member is releasably fixed to said boring bar, said flat frame member gaging surface extending longitudinally on a laterally inward end of said laterally-extending first leg and said movable measuring member being connected to said longitudinally-extending second leg for movement in a lateral direction relative thereto; and

said attachment means including a first threaded opening extending in an inward radial direction from said flat bar gaging surface, a second opening extending in a lateral direction through said laterally-extending first leg of said frame member, and a threaded screw received in said second opening and protruding laterally from said flat frame member gaging surface, said threaded screw being threadably receivable in said first threaded opening in said boring bar in order to removably fix said frame member to said boring bar with said flat bar gaging surface and said flat frame member gaging surface in said flat and flush mutual engagement.

4,623,287

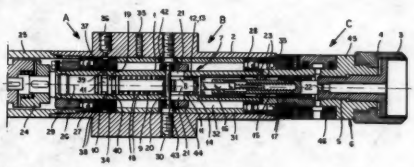
DRILLING MACHINE ESPECIALLY FOR DRILLING GLASS

Rüdolf Eckhardt; Hans-Christoph Neuendorf, both of Wesel, and Horst Freilingsdorf, Remscheid-Lennep, all of Fed. Rep. of Germany, assignors to Flachglas Aktiengesellschaft, Furth, Fed. Rep. of Germany

Filed Dec. 4, 1984, Ser. No. 677,838

Int. Cl.[4] B23B *51/04*

U.S. Cl. 408—206 **8 Claims**



1. A drill apparatus, especially for drilling glass, said apparatus comprising:

a drill spindle carrier;

a rotatably driven drill spindle operatively connected to said carrier so as to be advanced toward a workpiece;

a first drill connected to said drill spindle at a working end thereof;

a sinker drill operatively connected to said first spindle and surrounding said first drill, said first drill and said sinker drill being axially adjustable with respect to one another to compensate for accelerated wear of said first drill relative to said sinker drill;

a drill receiver on said spindle and connected to said first drill by means of adjustment threads; and

an adjustment device for said first drill, said adjustment device including:

a mechanical, forward and reverse stepping mechanism;

a hydraulic cylinder/piston actuating assembly for actuating said mechanism; and

means for supplying to said hydraulic cylinder/piston actuating assembly a hydraulic pressure medium and including at least one passage in said drill spindle carrier and at least one circular passage in said drill spindle, said mechanism being constructed and arranged to impart an effective amount of adjustment torque to said first drill such that said first drill is axially advanced by said adjustment threads, said mechanism including a control sleeve rotatably and axially guided in said drill spindle along a helical path, said control sleeve at its end face directed towards said drill having a plurality of sawteeth, a coupling having a corresponding plurality of teeth cooperating with the teeth of said control sleeve, a plunger having a multi-sided member for operatively connecting it therewith to said coupling for transfer of adjustment torque to said first drill, and a reset spring between said coupling and said plunger.

4,623,288

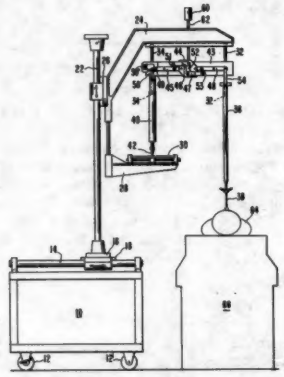
APPARATUS FOR PRODUCING TISSUE COMPENSATING FILTER FOR USE IN RADIATION

Richard J. Brunelli, San Jose, and Scott J. Mestman, Sunnyvale, both of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Continuation of Ser. No. 432,605, Oct. 4, 1982, abandoned. This application Aug. 6, 1984, Ser. No. 637,349

Int. Cl.[4] B23C *1/16;* **B29C** *33/38*

U.S. Cl. 409—84 **14 Claims**



1. Apparatus for making a cavity in a form, the cavity in the form being used to make a compensating radiation therapy filter of a predetermined material, the radiation therapy filter enabling a portion of a patient to be uniformly irradiated with isodose lines of radiation, the portion of the patient having irregular surfaces tending to produce skewing of isodose curves, the filter being placed at a predetermined position above and in alignment with the patient portion while treating the patient portion with a source of the radiation located a predetermined distance from the patient portion, said apparatus comprising:

a mechanical support means with a first pivotal point and a second pivotal point which are defined thereon and spaced from each other,

a first guide pivotally mounted to said mechanical support means at said first pivotal point so as to be able to swing freely in multiple planes with respect to said mechanical support means around said first pivotal point,

a second guide pivotally mounted to said mechanical support means at said second pivotal point so as to be able to swing freely in multiple planes with respect to said mechanical support means around said second pivotal point,

a stylus and housing for the stylus mounted on the first guide as an extension thereof and cooperatively arranged to move along said first guide towards and away from said first pivotal point for three dimensionally following the contour of the patient portion, the distance of the stylus from the first pivot point being maintained so it is equal to the distance of the patient portion from the radiation source,

a cutter and housing for the stylus mounted on the second guide as an extension thereof and cooperatively arranged to move along said second guide towards and away from said second pivotal point for three-dimensionally cutting material from the form,

a first coupling means for coupling said stylus and housing for the stylus to said cutter and housing for the cutter so that movement of said stylus is geometrically similar to movement of said cutter and the position of the cutting tool from the second pivotal point is maintained so it is equal to the distance of the filter material from the radiation source, said first coupling means including a tie bar pivotally attached to said first guide and said second guide, and linkage means pivotally connected to said tie bar, said stylus and stylus housing and said cutter and cutter housing being attached to said linkage means at spaced-apart positions, and

means for adjustably attaching said cutter housing to said linkage means for moving said cutter housing to different positions to provide different ratios of translation between said stylus and stylus housing and said cutter and cutter housing.

12. A method of making a cavity in a form, the cavity in the form being used to make a radiation therapy filter of a predetermined material, the radiation therapy filter enabling a portion of a patient to be uniformly irradiated with isodose lines of radiation, the portion of the patient having irregular surfaces tending to produce skewing of isodose curves, the filter being placed at a predetermined position above and in alignment with the patient portion while treating the patient portion with a source of the radiation located a predetermined distance from the patient portion, the method being performed with an apparatus including a stylus coupled to a cutting tool by an adjustable pantograph type linkage, the stylus being at one end of a first variable length rod having a second end mounted to pivot about a first pivot point, the cutting tool being at one end of a second variable length rod having a second end mounted to pivot about a second pivot point, the first and second pivot points being in the same horizontal plane, the linkage being constructed so that the ratio of movement of the stylus to the cutting tool is adjustable, the method comprising the steps of:

setting the linkage so the ratio of movement of the cutter to the movement of the stylus is equal to the ratio of the filter material radiation absorbtion to human tissue absorbtion,

maintaining the distance of the stylus from the first pivot point so it is equal to the distance of the patient portion from the radiation source,

maintaining the position of the cutting tool from the second pivot point so it is equal to the distance of the filter material from the radiation source,

with the linkage so set and the distances so maintained and the patient portion in the same position relative to the radiation source as during treatment and the form in the same position relative to the radiation source as the filter during treatment, tracing the stylus over the patient portion by changing the length of the first rod so the first rod length conforms with the distance between the first pivot point and all of the patient portions as the first rod is swung in multiple planes about the first pivot point to cause the length of the second rod to be proportional to the length of the first rod and the second rod to swing about the second pivot point in multiple planes to follow the swinging of the first rod about the first pivot point so that a replica of the tracing motion of the stylus is reproduced with said ratio by the cutter on the form, the cutter cutting the form to enable a mold to be made for a compensating filter that overcomes the tendency to produce skewing of the isodose curves by the patient portion having irregular surfaces.

4,623,289

SAFETY RETAINER FOR A WHEELCHAIR

John A. Apostolos, Sacramento, Calif., assignor to State of California, Department of Transportation, Sacramento, Calif.

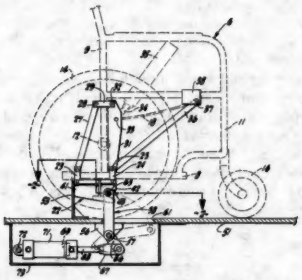
Filed Nov. 20, 1984, Ser. No. 673,330

Int. Cl.[4] B60N *1/02;* **B60P** *3/06*

U.S. Cl. 410—7 **8 Claims**

1. A safety retainer for a wheelchair having a frame and adapted to be disposed in a predetermined transverse and longitudinal position on a floor comprising a plate mounted on said frame to extend in a longitudinal direction and having an upstanding rear edge at a rearward end and having a forwardly open slot in an upstanding front edge at a forward end, a backstop secured to and upstanding from said floor in a loca-

tion to engage said rear edge, a bail mounted on said floor for movement between a retracted position below said floor and



an erected position interengaging said slot, and means for moving said bail between said retracted position and said erected position.

4,623,290

EXTERNALLY THREADED FIBER-REINFORCED PLASTIC MEMBER AND A METHOD OF PRODUCING THE SAME

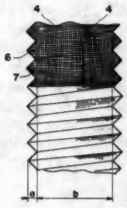
Kenji Kikuzawa, and Yukio Otaki, both of Moriyama, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Feb. 28, 1984, Ser. No. 584,401

Claims priority, application Japan, Feb. 28, 1983, 58-30877; Jul. 1, 1983, 58-119869

Int. Cl.⁴ F16B *21/00*

U.S. Cl. 411—350 **6 Claims**



1. An externally threaded, fiber-reinforced plastic member comprising a shank having a thread integrally formed on the exterior surface of said shank,

said shank and said thread each comprising a plurality of resin-impregnated yarn tapes or resin-impregnated yarn cloth slit tapes extending longitudinally of the shank, each of at least some of said tapes being cut out at its portions corresponding to spaces defined by the ridges of said thread, said yarn tapes being fabrics of yarn woven in the form of tapes, and said yarn cloth slit tapes being tapes prepared by cutting a fabric of yarn woven in the form of a cloth into a plurality of tapes,

each resin-impregnated yarn tape or each resin-impregnated yarn cloth slit tape being composed of a thermo-hardened resin and an elongated woven fabric comprising a plurality of first strands arranged substantially in parallel and extending longitudinally of said shank and a plurality of said second strands arranged substantially in parallel and substantially in perpendicular relation to said first strands, said first strands and second strands respectively constituting the warps and the wefts of said woven fabric, each strand comprising a plurality of fiber filaments,

said elongated woven fabric having a width, as measured between the warps respectively disposed at both outward ends of the widthwise length of the fabric, about 0.2 to about 3 times the maximum diameter of the threaded member,

said thread having therewithin portions of the second strands, most of said portions being those strand portions which extend continuously from the shank into the thread and terminate within the thread,

said strand portions which extend continuously from said shank into said thread and terminate within said thread existing continuously or discontinuously within said thread along the periphery of said thread corresponding to one pitch of the thread, provided that there is no portion within said thread in which said strand portion do not exist continuously over a length of 20% or more based on the peripheral length of said thread corresponding to one pitch of the thread.

4,623,291

PILING DEVICE FOR BOUND SETS OF SHEETS

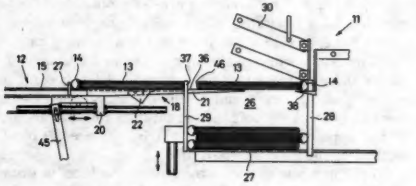
Hermann Buck, Huelben, Fed. Rep. of Germany, assignor to Bielomatik Leuze GmbH, Fed. Rep. of Germany

Filed Mar. 2, 1984, Ser. No. 585,773

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1983, 3307821

Int. Cl.⁴ B65G *57/081*

U.S. Cl. 414—31 **12 Claims**



1. A device for piling bound sets of sheets, each bound set having a binding edge and an opposite non-bound edge, in which successive bound sets of sheets are fed in a feeding direction to a piling position at a piling station at which the bound sets are to be lowered to form a pile with binding edges of successive bound sets of sheets lying alternately on opposite sides of the pile, each binding edge projecting beyond the non-bound edge of an adjacent set of sheets in the pile, the device comprising:

a transporter operative to feed the bound sets of sheets to the piling station;

a retaining device for selectively retaining only binding edges that are oriented toward the retaining device, the retaining device being arranged at the piling position in the vicinity of a one pile side at which the binding edges are to be aligned when piled at the piling station, the retaining device retaining each binding edge arriving at said one pile side, the retaining device being unable to retain non-bound edges arriving at said one pile side, the retaining device selectively holding the binding edge of only those sets of sheets having binding edges projecting on said one pile side; and,

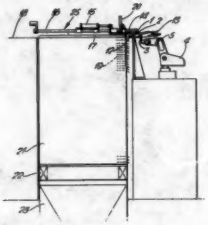
a pulling back device operative to urge each of said bound sets of sheets in a pulling back direction away from said one pile side, the retaining device aligning said bound sheets at said one pile side and the pulling back device displacing ones of said bound sets of sheets that are not retained, toward an opposite pile side as the sets of sheets are formed into a pile.

4,623,292

SHEET STACK DELIVERY METHOD AND APPARATUS

Kozo Suzuki; Takateru Sakaguchi, both of Hyogo; Osamu Tomita, Osaka, and Yoshiaki Tanaka, Hyogo, all of Japan, assignors to Kanzaki Paper Manufacturing Co., Ltd., Tokyo, Japan

Filed Dec. 19, 1984, Ser. No. 683,688
Claims priority, application Japan, Dec. 21, 1983, 58-243154
Int. Cl.[4] B65H 3/50
U.S. Cl. 414—114 4 Claims



1. A method for sequentially feeding sheet stacks bordered by sheet markers from a pile of aligned and stacked sheets containing sheet markers inserted into these sheets through end wall at specific intervals with a bare portion left outside, using a sheet stack delivery apparatus including at least lifter means that mounts sheet stacks to allow the uppermost sheet stack to be sequentially transferred to a pre-determined level; a wedge-type head for separating sheet stacks comprising its tip part facing the end wall of the sheet pile at a position close to the sheet marker bordering the uppermost and the second sheet stacks and also the upper tilt surface and the bottom surface ending at the tip part; and means for transferring the uppermost sheet stack by holding and pushing forward an end wall of the uppermost sheet stack split by the wedge head; said method comprising the steps of:

(a) lifting a pile of sheets by driving the lifter in order that the uppermost sheet stack can be lifted to such a level allowing its transfer;

(b) sucking and holding the bare portion of the sheet markers between the uppermost sheet stack set at the transferrable level and the second sheet stack to cause a gap to be generated between the sheet marker and the second sheet stack by raising the height position of suction means;

(c) inserting guide means composed of relatively rigid and smooth sheet into said gap generated by step (b);

(d) inserting the wedge head into said gap above said guide means inserted into said gap in such a manner that the bottom surface of the wedge head comes into contact with the upper surface of guide means so that said gap can be expanded to allow lifting of the uppermost sheet stack at its end wall; and

(e) receiving and holding the end wall of the lifted sheet stack at the receiver part of the tip of feeding means and transferring the lifted sheet stack by forwarding said feeding means.

4,623,293

APPARATUS FOR ORIENTATING ELONGATE BODIES

Christopher K. Brown, Camp Hill; Lex D. Kensinger, Annville; Gregory S. Klopp, Hummelstown; Alden O. Long, Jr., Carlisle; Carl L. Moyer, Mt. Penn; William R. Over, Harrisburg, and Herman D. Walter, Camp Hill, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 8, 1985, Ser. No. 699,964
Int. Cl.[4] B65G 59/06
U.S. Cl. 414—126 9 Claims

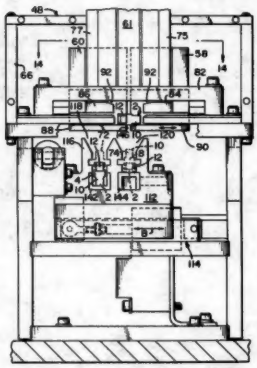
1. Apparatus for orientating elongate bodies, the apparatus comprising:

a frame;

means on the frame for containing first and second vertical stacks of said elongate bodies;

escapement means movably mounted in the frame, beneath said containing means, for releasing one body at a time from a selected one of said stacks to allow the body to fall from the stack;

first and second traps mounted in the frame beneath the escapement means, for movement between a first, body supporting position in which the traps are adjacent to one another to support a body released by the escapement means, and a second, body release position in which the traps are relatively displaced from one another to allow a body supported thereby to fall therebetween and thereby to release the body;



means for guiding a body released by the body escapement means onto the traps so that the body lies thereon in juxtaposed relationship to the traps when they are in their first position, so that the body spans the traps;

first and second receptacles mounted on the frame and beneath the traps each for receiving and supporting a body released thereby, in an upstanding position;

means on the frame for moving a selected one of the receptacles into a position to receive a body released by the traps; and

means for moving each trap, individually, from its first towards its second position to determine the vertical orientation with which the body is received in this selected receptacle.

4,623,294

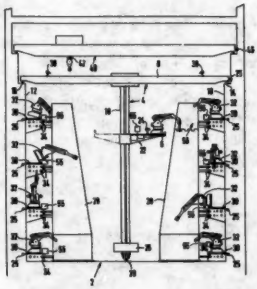
APPARATUS FOR CARRYING OUT REPAIR, MAINTENANCE OR TESTING OF APPARATUS, COMPONENTS AND THE LIKE IN HOT CELLS

Günter Schröder, Wetter, Fed. Rep. of Germany, assignor to Deutsche Gesellschaft, Fed. Rep. of Germany

Division of Ser. No. 421,716, Sep. 22, 1982, Pat. No. 4,526,311.
This application Nov. 28, 1984, Ser. No. 675,773
Claims priority, application Fed. Rep. of Germany, Sep. 8, 1982, 31384846
Int. Cl.[4] B23Q 7/00
U.S. Cl. 414—590 8 Claims

1. An apparatus for carrying out repair, maintenance or testing of components in a hot cell, comprising at least one central, controllable manipulator, a plurality of controllable side manipulators, a T-shaped support vehicle, an equipment table, a monitoring device and a control computer, said central manipulator being arranged in the hot cell and mounted so as to be capable of horizontal and vertical travel and also of rotary or pivotal movement, said central manipulator being arranged to cooperate with each of said side manipulators, said

side manipulators being capable of horizontal travel, said side manipulators being arranged in a plurality of vertically spaced planes, said monitoring device being capable of ascertaining the position coordinates of damage or defect zones, said monitoring device being in communication with said computer such that said ascertained position coordinates can be fed into said computer, said computer being situated outside the hot cell and being connected by means of control lines to said central manipulator and said side manipulators, said central manipulator being mounted on said T-shaped support vehicle, said T-shaped support vehicle comprising a transverse support and a vertical column centrally supporting said transverse support,



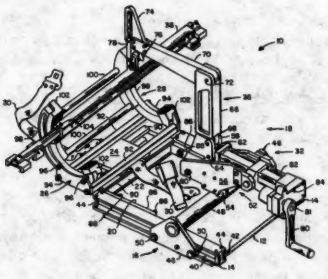
said transverse support being capable of horizontal travel with respect to a wall of the hot cell, said vertical column being capable of horizontal travel with respect to a floor of hot cell, said support vehicle additionally comprising at least one support arm on which said central manipulator is mounted, said equipment table being mounted on said vertical column of said support vehicle within reach of said central manipulator, said equipment table being designed to accommodate tools, replacement parts and materials required for carrying out repair and maintenance work in a position such that said tools, replacement parts and materials can be manipulated by said central manipulator.

4,623,295

ONE-STEP LOADING ADAPTER

Dale R. Foss, St. Charles County, and John H. Smith, St. Louis County, both of Mo., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 3, 1985, Ser. No. 751,400
Int. Cl.[4] B65G *7/12*
U.S. Cl. 414—608 **7 Claims**



1. A one-step loading adapter, said one-step loading adapter is removably attached to a lifting truck, said one-step loading adapter being able to transport a store from a storage location to a loading position on an aircraft wing, said one-step loading adapter comprising:

a mounting plate, said mounting plate being removably attached to said lifting truck, said mounting plate having a pair of parallel tracks fixedly mounted thereon, each of said tracks having an inside and an outside track thereon;

a boom assembly trolley, said boom assembly trolley translateably mounted in said outside tracks, said boom assembly trolley having a pivot post;

a boom assembly means, said boom assembly means removably mounted in said pivot post of said boom assembly means trolley, said boom assembly means able to lift and lower a store;

a cradle assembly trolley, said cradle assembly trolley being translateably mounted in said inside tracks, said cradle assembly trolley having fixedly mounted thereon a lateral track assembly;

a cradle trolley, said cradle trolley translateably mounted in said lateral track assembly; and

an adjustable cradle, said adjustable cradle mounted to said cradle trolley; and

means for holding said store in said adjustable cradle;

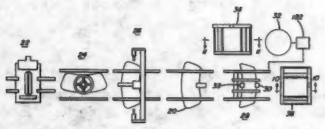
wherein said store in said adjustable cradle is able to be moved fore and aft, laterally, and rotationally.

4,623,296

ROBOT END EFFECTOR TO TRANSFER SHAPED PARTS

Kenneth J. McGuire, Sarver; John R. Dahlberg, Jeannette, and Charles J. Hyatt, Cheswick, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Aug. 7, 1984, Ser. No. 638,834
Int. Cl.[4] B65G *65/02*
U.S. Cl. 414—730 **19 Claims**



7. An end effector apparatus for attachment to an industrial robot for transferring windshield assemblies with spacer clips located on an edge of said assemblies comprising:

a main frame with means to attach said main frame to said robot;

gripping means positioned on said main frame to engage and secure said assemblies to said main frame;

clip retaining means positioned on said main frame to temporarily secure said spacer clip to said assemblies;

clip sensing means positioned on said main frame to sense if said clip is located on said assemblies; and

means to control said robot in conjunction with said gripping means, clip retaining means, and clip sensing means, wherein said clip retaining means secures said clip to said assemblies while said sensing means senses if said clip is one said assembly, said gripping means secures said assemblies to said end effector apparatus and said robot transfers said assemblies.

4,623,297

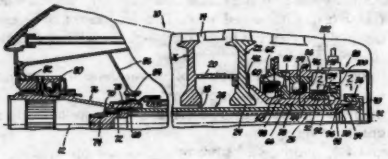
TURBINE ROTOR FOR GAS TURBINE ENGINE

Paul E. Beam, Jr., Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed May 28, 1985, Ser. No. 737,775
Int. Cl.[4] F01D *25/16*
U.S. Cl. 415—118 **4 Claims**

1. In a gas turbine engine having a casing defining an axis of said engine, a rotor for disposition between a pair of anti-fric-

tion bearings disposed on said casing and aligned on said axis comprising, a turbine wheel disposed between said bearings in a plane perpendicular to said axis and including a centerbore therethrough, a main shaft aligned on said axis projecting through said centerbore with a turbine end on one side of said turbine wheel and an output end on the other side thereof, means defining reversed flange on said main shaft turbine end radially outboard of said main shaft, means connecting said reversed flange to said turbine wheel for torque transfer to said main shaft, one of said bearings engaging said reversed flange for rotatably supporting a turbine end of said rotor on said engine casing, a tubular reference shaft around said main shaft projecting through said centerbore with a turbine end of said



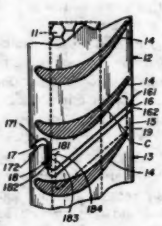
reference shaft disposed between said reversed flange and said main shaft and with an output end of said reference shaft rigidly connected to said main shaft output end, journal bearing means between an outer surface of said reference shaft and an inner surface of said reversed flange whereby said reference shaft turbine end and said reversed flange are freely relatively rotatable but unitized to resist beam bending of said rotor, the other of said bearings engaging said reference shaft generally at said output end thereof whereby an output end of said rotor is rotatably supported on said engine casing, and transducer means between said turbine end of said main shaft and said turbine end of said reference shaft operative to generate a signal proportional to the relative angular positions of said main shaft turbine end and said reference shaft turbine end.

4,623,298

TURBINE SHROUD SEALING DEVICE

Claude C. Hallinger, Vaux-le-Penil, and Alain M. J. Lardellier, Melun, both of France, assignors to Société Nationale d'Etudes et de Construction de Moteurs d'Aviation, Paris, France

Filed Sep. 20, 1984, Ser. No. 652,475
Claims priority, application France, Sep. 21, 1983, 83 14974
Int. Cl.[4] F01D *11/02*
U.S. Cl. 415—139 **3 Claims**



1. In a turbine having an outer housing and at least one rotor blade wheel located within the outer housing having at least one labyrinth sealing fin extending radially therefrom, the improvements comprising:

(a) a plurality of guide vane shroud segments forming a guide vane shroud attached to the housing and located adjacent to the rotor blade wheel, each of the shroud segments having generally "Z" shaped ends on its radially inner ring, each such end having a mid-portion extending generally parallel to the rotational plane of the rotor blade wheel such that it contacts a corresponding mid-portion of an adjacent shroud segment, a leading edge portion extending at an acute angle from the mid-portion to a leading edge of the shroud segment and a trailing edge portion, longer than the leading edge portion, extending at an acute angle from the mid-portion to a trailing edge of the shroud segment, the leading and trailing edge portions of one segment being spaced apart from corresponding leading and trailing edge portions of adjacent shroud segments to allow for thermal expansion;

(b) a wear-resistant material attached to each mid-portion;

(c) seal means disposed between trailing edge portions of adjacent shroud segments; and,

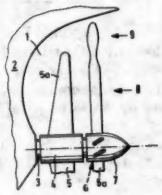
(d) labyrinth seal means disposed on the radially innermost side of the guide vane shroud adjacent to the labyrinth sealing fin, the labyrinth seal means comprising a honeycomb packing structure defining a plurality of hexagonal cells, each cell having two opposite sides joined to adjacent cells, such joined, opposite sides lying in parallel planes extending at an angle of approximately 30° to the rotational plane of the rotor blade wheel, the trailing edge portion extending approximately from an upstream edge of the labyrinth seal means to the trailing edge of the shroud segment.

4,623,299

DRIVING ARRANGEMENT FOR WATERCRAFT

Otto Grim, Hamburg, Fed. Rep. of Germany, assignor to Harmstorf AG, Flensburg, Fed. Rep. of Germany

Filed Jan. 14, 1985, Ser. No. 691,455
Claims priority, application European Pat. Off., Jan. 14, 1984, 84100358.5
Int. Cl.[4] B63H *1/26*
U.S. Cl. 416—124 **4 Claims**



1. A watercraft drive comprising:

a propeller having a given number of blades and a rotational speed, said propeller providing a main propulsion stream; and

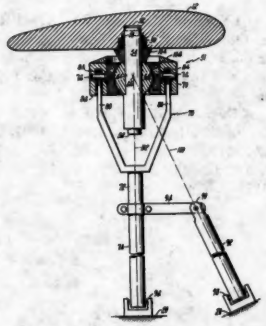
a guide wheel freely rotatable downstream of said propeller and having a number of blades greater than the number of blades of said propeller and a rotational speed smaller than the rotational speed of said propeller, said blades of said guide wheel each having one segment lying within said stream and being shaped as turbine blades and another segment extending outside the propeller stream and being shaped in a propeller blade-like manner, said propeller and said guide wheel being rotatable in the same direction of rotation and said segment extending outside the propeller stream having a pitch essentially at a constant value in radial direction and said segment lying within said stream having a pitch increasing steadily radially from said constant value to a hub of said guide wheel.

4,623,300

HELICOPTER ROTOR BLADE SECUREMENT DEVICE

Harry L. Ruzicka, Easton, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Sep. 19, 1985, Ser. No. 777,799
Int. Cl.[4] B64C 27/50
U.S. Cl. 416—143 4 Claims



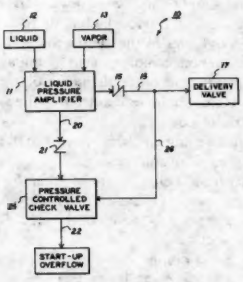
1. A device for securing the folded blades of a helicopter to the fuselage comprising, for each blade:
a receptacle installed in the underside of the blade;
attachment means for engaging the receptacle;
a spherical bearing disposed about the attachment means;
an annular housing disposed about the bearing;
a clevis-type yoke having two ends pivotally attached to the housing;
a primary strut attached at one end to the fuselage and at the other end to the clevis-type yoke;
a secondary strut attached at one end to the fuselage and attached at the other end to the primary strut near the yoke.

4,623,301

OVERFLOW CHECK SYSTEM

Richard M. Reynolds, Mumford, N.Y., assignor to Helios Research Corp., Mumford, N.Y.

Filed Nov. 29, 1984, Ser. No. 676,289
Int. Cl.[4] F04F 5/48
U.S. Cl. 417—54 17 Claims



1. A system for checking overflow of liquid and vapor supplied to a vapor powered liquid pressure amplifier during an inoperative interval of said amplifier, which, during an operative interval, combines said liquid and vapor into an amplified output pressure, said system comprising:
a. an overrideable check valve oriented to block said overflow;
b. means for applying said amplified output pressure from said amplifier to remove the override and enable said check valve to block said overflow; and
c. means for holding said applied pressure to enable said check valve to stay closed during said inoperative interval.

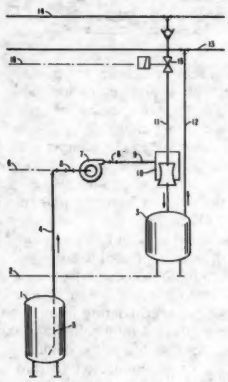
11. A method of checking non-start-up overflow from a vapor powered liquid pressure amplifier having continuously available liquid and vapor inputs combined into a pressurized liquid output delivered intermittently, said method comprising:
a. orienting an outflow check valve to block said overflow;
b. disabling said outflow check valve from closing during start-up intervals when amplified output pressure is unavailable from said amplifier;
c. using amplified output pressure produced by operation of said amplifier for enabling said outflow check valve to block said overflow; and
d. using an inflow check valve oriented to block inflow to said amplifier via said overflow.

4,623,302

ARRANGEMENT FOR FACILITATING THE START-UP OF NOT SELF-PRIMING CENTRIFUGAL PUMPS

Horst Zeh, Eggenstein-Leopoldshafen, Fed. Rep. of Germany, assignor to Wiederaufbereitungsanlage Karlsruhe Betriebsgesellschaft mbH, Eggenstein-Leopoldshafen, Fed. Rep. of Germany

Filed Oct. 21, 1985, Ser. No. 789,943
Claims priority, application Fed. Rep. of Germany, Nov. 23, 1984, 3442716
Int. Cl.[4] F04D 9/06
U.S. Cl. 417—89 4 Claims



1. Arrangement for facilitating startup of a not self-priming centrifugal pump which is disposed above the liquid level of a first container adapted to receive radioactive liquid of a nuclear fuel reprocessing plant for pumping the liquid to a second container, said arrangement comprising liquid transfer piping extending between said first and second containers, said transfer pipe including a centrifugal pump arranged above said containers and having an inlet connected to a suction section of said piping and an outlet connected to a supply section of said piping and a self-priming pressurized air operated jet pump disposed in the supply section of said transfer piping and connected to a pressurized air supply pipe such that said jet pump, upon operation thereof in the start-up phase, is adapted to lift liquid from said first container into and through said centrifugal pump and, in the pumping phase when said centrifugal pump is operated after being primed by said jet pump, the liquid is pumped by the centrifugal pump through said jet pump to said second container, said second container being connected to an air discharge line, both said pressurized air

supply pipe and said air discharge line extending at an elevation higher than said pumps, which elevation is not reachable by said radioactive liquid.

4,623,303

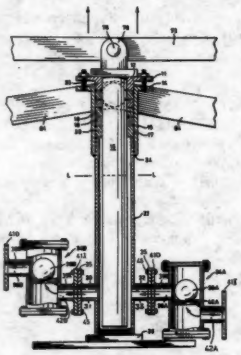
PUMP FOR SLURRIES

James K. Henderson, P.O. Box 25, Brampton, Ontario, Canada L6V 2K7

Continuation-in-part of Ser. No. 583,597, Feb. 27, 1984, Pat. No. 4,526,520, which is a continuation-in-part of Ser. No. 466,373, Feb. 13, 1983, abandoned. This application Mar. 29, 1985, Ser. No. 717,683

Int. Cl.[4] F04B *15/02*

U.S. Cl. 417—238 **1 Claim**



1. Positive displacement pump for pumping thick slurries having cylinder with a plunger reciprocable in a direction therein, to define a plunger chamber of volume varying with the location of said plunger,

a chamber inlet conduit to the plunger chamber,

a gravity biased ball valve connection to said inlet conduit allowing flow only toward said chamber,

a chamber outlet conduit from the plunger chamber,

a gravity ball valve connected to said chamber outlet conduit allowing flow only out of said chamber,

means for reciprocating said plunger,

each of said conduits projecting from said chamber transverse to the reciprocation direction of said plunger,

each of said conduits terminating in an outwardly directed chamber flange having four bolts holes defining a square with the conduit opening at the center,

the gravity ball valve connected to said chamber outlet conduit being provided with a valve inlet conduit extending transverse to the flow direction through said valve,

said valve inlet conduit terminating in an outwardly directed valve flange having four bolt holes with the conduit opening at the center for registration with those on the flange of said chamber outlet conduit,

said valve flange bolt holes being located to mount said ball valve with its flow direction parallel to one of four directions at angular intervals of 90° relative to the reciprocation direction of said plunger,

the gravity ball valve connected to said chamber inlet conduit being provided with a valve outlet conduit extending transverse to the flow direction through said valve,

said valve outlet conduit terminating in an outwardly directed flange having four bolt holes with the conduit opening at the center, arranged for registration with those on the flange of said chamber inlet conduit,

said last mentioned valve flange bolt holes being located to mount said last mentioned ball valve with its flow direction at one of four directions at angular intervals of 90° relative to the reciprocation direction of said plunger,

said ball valves being bolted to said plunger chamber conduits through the holes in cooperating flanges so that the flow direction and sense is substantially the same in both valves, whereby, said plunger chamber can be mounted either horizontally or vertically as necessary for a given pumping environment.

4,623,304

HERMETICALLY SEALED ROTARY COMPRESSOR

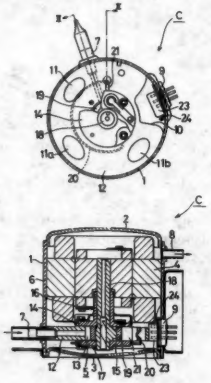
Ichizo Chikada, Ota; Isamu Shoji, Ashikaga, and Hideyasu Sakaniwa, Honjo, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka and Tokyo Sanyo Electric Co., Ltd., Gunma, both of, Japan

Filed Dec. 7, 1982, Ser. No. 447,646

Claims priority, application Japan, Dec. 8, 1981, 56-197971; Mar. 2, 1982, 57-33677

Int. Cl.[4] F04B *21/00, 35/04*

U.S. Cl. 417—312 **8 Claims**



1. In a hermetically sealed rotary compressor of the type comprising:

a vertically disposed hermetically sealed cylindrical casing having a cylindrical sidewall,

an electric motor force-fitted within the casing in coaxial relation therewith, said motor having a rotor and a stator including a stator winding,

a rotary refrigerant compressing device driven by the motor, said comnressing device including (i) a cylinder block defining a cylinder in the center thereof, and (ii) top and bottom end plates closing said cylinder at each of its opposite ends, the outer diameter of the top end plate being less than the inner diameter of the stator winding of the eiectric motor,

a terminal for feeding electrical power to the motor attached to said sidewall of said casing,

said cylinder block being secured within the casing such that said top end plate is disposed in a hollow space defined by the rotor, the stator winding of the electric motor, and the cylinder block,

the improvement comprising:

said cylinder block being formed in a substantially circular shape in plan having a concavity in its sidewall, substantially said entire sidewall of said cylinder block, excepting said concavity, being force-fitted against the internal surface of said sidewall of said casing,

said terminal attached to said sidewall of said casing being situated in the opening framed by the concavity in the sidewall of the cylinder block and the internal surface of the sidewall of the casing, with said concavity being only large enough to receive said terminal,

said stator winding being disposed close to the upper surface of the cylinder block, and

said top end plate having a discharge muffler thereon, said discharge muffler being disposed in said hollow space together with said top end plate.

4,623,305

DEVICE FOR PUMPING OIL

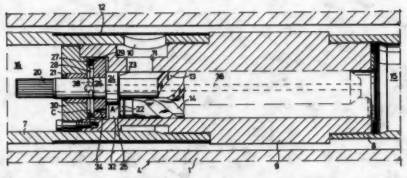
Lars Segerström, Skärholmen, Sweden, assignor to IMO AB, Stockholm, Sweden

Filed Jun. 12, 1985, Ser. No. 744,039

Claims priority, application Sweden, Jun. 20, 1984, 8403316

Int. Cl.[4] F04B *21/00, 17/00;* F04C *2/18*

U.S. Cl. 417—365 **6 Claims**



1. A hydraulic screw machine with an inlet at the low pressure side of the machine and an outlet including

a screw array disposed inside a housing comprising a drive screw and at least one running screw co-acting therewith said drive screw being jointed to a shaft extending out of said housing at the low pressure side of the machine, said screws being provided at said low pressure side of said screw array with mutually co-acting balancing pistons adapted to hydraulically balance said screws against axial forces;

a balancing collar mounted on said drive screw, one radial side of said collar together with a part of said housing defining a first axially variable pressure chamber which is in communication with said outlet, the radial surface of said first pressure chamber being greater that the combined radial sectional surfaces of the screw bores in said housing in which said screws are accommodated;

the other radial side of said collar together with the balancing piston of said running screw, the balancing piston of said drive screw and a part of said housing defining a second axially variable pressure chamber which is in constricted communication with said outlet of the screw machine.

4,623,306

SCROLL COMPRESSOR WITH BEARING LUBRICATION MEANS

Toshiyuki Nakamura; Masahiro Sugihara; Tsutomu Inaba, and Tadashi Kimura, all of Wakayama, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 5, 1985, Ser. No. 708,768

Claims priority, application Japan, Mar. 5, 1984, 59-42503

Int. Cl.[4] F04C *18/04, 29/02*

U.S. Cl. 418—55 **18 Claims**

1. A scroll compressor, comprising:

a closed housing having an oil pool at a bottom thereof;

a bearing frame provided in said housing;

a stationary scroll provided in said housing and positioned above said bearing frame, said stationary scroll having a first spiral wrap on the side of said bearing frame;

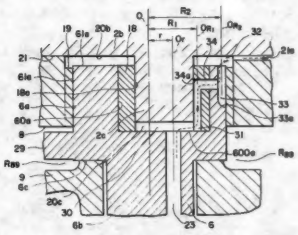
an orbiting scroll provided in said housing and interposed between said stationary scroll and said bearing frame and which has a second spiral wrap on the side of said stationary scroll, said first and second wraps being combined together to form refrigerant gas compression chambers therebetween;

a main shaft which penetrates said bearing frame vertically and is supported by said bearing frame, said main shaft having an upper end portion coupled to said orbiting scroll and a lower end portion immersed in lubricant in said oil pool;

an electric motor arranged between said bearing frame and oil pool to rotate said main shaft;

a rotation preventing mechanism for, when said motor applies torque to said orbiting scroll through said main shaft, preventing said orbiting scroll from rotating but allowing said orbiting scroll to resolve;

a first centrifugal pump for pumping lubricant substantially in the axial direction of said main shaft from said oil pool to an upper portion of said main shaft with the aid of



centrifugal force produced by said main shaft and said main shaft rotates;

a second centrifugal pump, formed substantially in the axial direction of said main shaft, for supplying lubricant thus pumped from said first centrifugal pump to a sliding part between said main shaft and said orbiting scroll with the aid of centrifugal force produced by said shaft as said main shaft rotates; and

a third centrifugal pump, formed substantially in the axial direction of said main shaft, for supplying lubricant discharged by said second centrifugal pump to a sliding part between said main shaft and said bearing frame with the aid of centrifugal force produced by said main shaft as said main shaft rotates.

4,623,307

DEVICE FOR EXTRUDING FLOWABLE SUBSTANCES

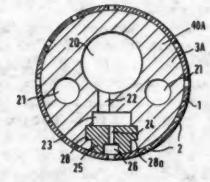
Reinhard Froeschke, Weinstadt, Fed. Rep. of Germany, assignor to Santrade Ltd., Lucerne, Switzerland

Filed Sep. 14, 1984, Ser. No. 650,701

Claims priority, application Canada, Nov. 2, 1983, 440256

Int. Cl.[4] B29C *67/02*

U.S. Cl. 425—8 **9 Claims**



1. Apparatus for extruding a flowable material in drop form onto a surface disposed therebeneath, said apparatus comprising an outer cylindrical container having first openings therethrough, said outer cylindrical container having an inner surface, an inner container disposed within said inner surface of said outer cylindrical container, said inner container including a cylindrical body and a nozzle bar replaceably attached to said cylindrical body, said nozzle bar containing second openings

to which said flowable material is fed and conducted outwardly, said second openings configured in accordance with the flow characteristics of that material to achieve a particular drop configuration, and means for effecting relative rotation between said inner and outer containers about an axis of rotation to bring said first and second openings cyclically into alignment over the surface whereupon the flowable material falls from said aligned openings and onto the surface in the form of drops, said nozzle bar oriented parallel to said axis of rotation and including a radially outer periphery curved correspondingly to said inner surface.

4,623,308

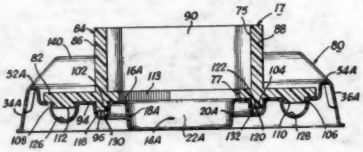
FREE STANDING BASE MOLD

Keith Hellon, Libertyville, Ill., assignor to MacLean-Fogg Company, Mundelein, Ill.

Continuation-in-part of Ser. No. 600,775, Apr. 16, 1984, abandoned. This application Nov. 25, 1985, Ser. No. 801,563

Int. Cl.[4] B29C *1/00, 1/14*

U.S. Cl. 425—117 **16 Claims**



1. A free standing, disposable, unitary base mold formed entirely of press molded, thin, plastic sheet material and having a generally rectangular shaped outer peripheral support wall structure formed with a continuous, supporting lower edge adapted to rest upon a planar surface for supporting said base mold thereon during use:

said base mold including first means forming a lower mold receptacle having a generally rectangular peripheral outline for containing a tissue specimen to be embedded in a tissue embedding material flowed into said lower mold receptacle from above while in a fluid condition and solidifying around said specimen to secure said specimen in a fixed position within said lower mold receptacle,

said lower mold receptacle including a planar bottom wall having an underside in coplanar relation with said lower edge of said support wall structure to also rest on said planar surface, said bottom wall having a continuous, outer peripheral edge spaced apart inwardly of said lower edge of said support wall structure and integrally joining an upstanding peripheral side wall;

said base mold further including second means forming an upper mold receptacle for receiving a tissue cassette placed therein after placement of said tissue specimen in said lower mold receptable, said tissue cassette being of a type having a wall adapted to overlie said lower mold receptacle while said cassette is placed in said upper mold receptacle and said cassette wall having at least one aperture therein for communication between said upper and lower mold receptacles for permitting at least some of said fluid embedding material poured into said upper mold receptacle to flow through said aperture into said lower mold receptacle to embed said tissue specimen in said material,

said upper mold receptacle including a lower panel for supporting said cassette around edge portions thereof, said panel spaced parallel and above said bottom wall for integrally joining an upper peripheral edge of said upstanding peripheral side wall of said lower mold receptacle and extending outwardly thereof toward said support wall structure,

said lower panel of said upper mold receptacle integrally joining an upstanding peripheral side wall of said upper mold receptacle, said peripheral side wall of said upper mold receptacle integrally joining a peripheral rim;

said rim integrally joining said support wall structure, said support wall structure being downwardly and outwardly sloping.

4,623,309

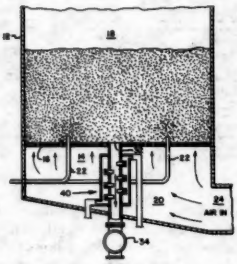
FLUID BED COMBUSTOR AND APPARATUS FOR COOLING PARTICULATE SOLIDS

Bard C. Teigen, Enfield, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Nov. 20, 1985, Ser. No. 799,874

Int. Cl.[4] F23D *19/00*

U.S. Cl. 431—170 **3 Claims**



1. A fluidized bed reactor having a housing defining therein a chamber, a bed support plate disposed within the housing and dividing said chamber into a fluidizing zone thereabove and an air plenum therebeneath, means for supplying particulate material including fuel into the fluidizing zone so as to establish a bed of particulate material therein superadjacent the bed support plate, means for supplying air into the air plenum to pass through the bed support plate into the fluidizing zone to fluidize the bed of particulate material, and a bed drain assembly adapted to receive particulate material for removal from the bed, said bed drain assembly comprising:

a. first conduit means having a bounding wall defining a passageway having an inlet communicating with the bed for receiving particulate material and an outlet for discharging particulate material therefrom;

b. second conduit means disposed coaxially about said first conduit means and defining an annular passageway therebetween having an inlet opening at one end thereof and an outlet opening at the other end thereof for conveying a cooling fluid therethrough in indirect heat exchange relationship with the particulate material passing through said first conduit means; and

c. a plurality of heat transfer pins each mounted within the bounding wall of said first conduit means such that a first portion of each of said heat transfer pins extends into the passageway for particulate material defined within said first conduit means and a second portion of each of said heat transfer pins extends into the annular passageway for cooling fluid defined between said first and second conduit means, the first portion of each of said heat transfer pins comprising an axially elongated cylinder-like shell having an open end and a closed end, said shell mounted in said first conduit means with its open end opening to the annular cooling fluid passageway and with its closed end extending into the passageway for particulate material defined within said first conduit means; and the second portion of each of said heat transfer pins comprising an axially elongated rod-like element, said rod-like element having a first end inserted into said cylinder-like shell in closely spaced relationship therewith through the open end thereof to abut the closed end thereof and a second

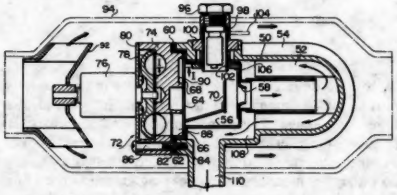
end extending into the annular cooling fluid passageway having a plurality of axially spaced fins extending circumferentially outwardly therefrom within the annular cooling fluid passageway.

4,623,310

VAPORIZED LIQUID FUEL COMBUSTION APPARATUS

Yoshiaki Kimijima, Yaita, and Kunio Kikuchi, Odawara, both of Japan, assignors to Mikuni Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 24, 1985, Ser. No. 727,004
Int. Cl.[4] F23Q *3/00*
U.S. Cl. 431—261 **5 Claims**



1. A vaporized liquid fuel combustion apparatus comprising:

a cylinder defining a combustion chamber, said cylinder having an inlet end for receipt of combustion air, a first flange surrounding said inlet end and an outlet end for exhausting gaseous combustion products;

means for introducing the fuel into said combustion chamber and ignition means exposed to said combustion chamber through said cylinder;

an end plate at least partially covering said inlet end of said cylinder and defining an opening for the admission of combustion air into said combustion chamber, said end plate having a second flange surrounding its periphery, said second flange mating with said first flange;

a cylindrical heat exhanger for indirect heat exchange between the combustion products and a fluid to be heated, said heat exchanger surrounding said outlet end of said cylinder and having a third flange at one end thereof, said third flange mating with said first and second flanges;

a blower for feeding air to said combustion chamber, said blower having an end portion contoured to mate with said first, second and third flanges; and

means for detachably securing said first, second and third flanges and said blower end portion together to form a single gaslight flanged joint, said cylinder, blower end plate and heat exchanger being separable components secured together only at said single flanged joint.

4,623,311

CALCINING APPARATUS FOR POWDERY MATERIALS

Hirofumi Hatano; Masayasu Yamazaki, both of Kitakyushu; Atsushi Sasaki, and Keigo Mikami, both of Hiroshima, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 446,312, Dec. 2, 1982, abandoned. This application Jul. 22, 1985, Ser. No. 757,926
Int. Cl.[4] F27B *7/02*
U.S. Cl. 432—106 **1 Claim**

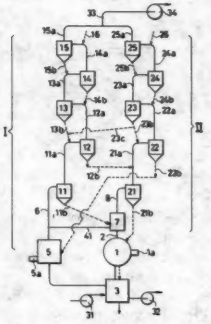
1. A calcining apparatus for a powdery material comprising:

a. a first preheating series composed of a calcining kiln and a first series of preheaters comprising a plurality of solid gas separators for heating the powdery material with an exhaust gas from said calcining kiln,

b. a second preheating series comprising a rotary kiln having an exhaust pipe, a calcining chamber disposed on the exhaust pipe and a second series of preheaters comprising a plurality of solid gas separators for heating the powdery material with the exhaust gas from the calcining chamber,

c. two gas carrying conduits, one between the calcining chamber **7** and the exhaust conduit **6** running from the calcining kiln and the first gas separator in the first series, the second between exhaust conduits **11***a* and **21***a* running from each of first gas separators to the second gas separators in each series,

d. separate feed ports for feeding separate portions of the powdery materials into each of said series, said feed ports being positioned so that one portion of the powdery material is fed into the exhaust gas from the first series just before the exhaust gas enters the last preheater in the first series and the second portion of the powdery material is fed into the exhaust gas from the second series just before



the exhaust gas enters the last preheater in the second series,

e. a first powdery material carrying conduit connecting the two series located between second and third preheater above the calcining kiln of the first series and the second and third preheaters above the calcining chamber in the second series adapted to permit mixing of at least a portion of the powder from the second series with the powder of the first series and to thereafter pass into the second preheater above the calcining kiln,

f. a flow path for conducting the powdery material from the second preheater above the calcining kiln to the rotary kiln, said flow path comprising successively (a) the second preheater above the rotary kiln, (b) the calcining kiln, (c) the calcining chamber, the first preheater above the rotary kiln, and (d) the rotary kiln.

4,623,312

CHANGEABLE MODULAR TRAINING SYSTEM TO PROVIDE INSTRUCTION FOR INSTALLING, SERVICING, TROUBLESHOOTING AND OPERATING ELECTROMECHANICAL CONTROL SYSTEMS

Larry C. Crawford, Redmond, Wash., assignor to Training Labs, Inc., Redmond, Wash.

Filed Oct. 31, 1984, Ser. No. 666,977
Int. Cl.[4] G09B *9/00*
U.S. Cl. 434—224 **21 Claims**

1. A module for use in a training system assembly which includes a power base, comprising:

(a) said module being multi-sided and including first electrical connector means on one side for jacking said module into said power base or a second module for supplying power thereto;

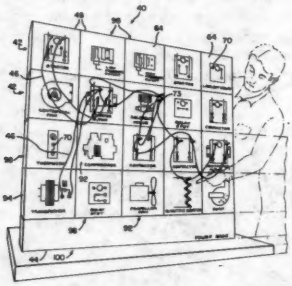
(b) said module including second electrical connector means on a second side thereof opposite said one side for jacking said module into a second module and for supplying power thereto;

(c) said module comprising a receptacle having an electrical component mounted therein;

(d) said electrical component having leads electrically connected to at least one of said first and second electrical connector means;

(e) said module including electrical display means on a third side thereof;

(f) said electrical component having leads connected to said electrical display means;



(g) said module including operator control means on a fourth side thereof;

(h) said electrical component having leads connected to said operator control means; and,

(i) said first and second electrical connector means also providing vertical structural support for the modules when stacked on said base.

4,623,313

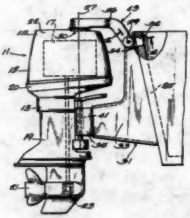
PIVOTAL AIR INDUCTION FOR MARINE PROPULSION DEVICE

Arthur R. Ferguson, Northbrook, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Continuation-in-part of Ser. No. 605,141, Apr. 30, 1984, Pat. No. 4,545,770, which is a continuation-in-part of Ser. No. 293,324, Aug. 17, 1981, Pat. No. 4,449,945. This application Jul. 16, 1984, Ser. No. 631,407

Int. Cl.[4] B63H *21/36*

U.S. Cl. 440—77 **21 Claims**



16. A marine propulsion device comprising a mounting bracket assembly, a propulsion unit including an internal combustion engine and being rotatably connected to said mounting bracket assembly for rotation relative to said mounting bracket assembly about a generally vertical steering axis, a shroud substantially enclosing said engine and having therein a combustion air opening centered on said steering axis, and rigid duct means having opposite first and second ends, said first end communicating with said opening and being rotatably connected to said shroud for rotation about said steering axis, and said second end being adapted for connection to and for communication through the transom of a boat to enable said engine to draw combustion air from the interior of the boat.

4,623,314

BOW FACING ROWING ARRANGEMENT

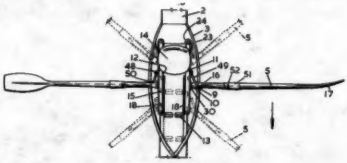
George B. Waugh, 337 Bogmoor Rd., Shieldhall, Glasgow, Scotland G51 4SG

Filed Feb. 25, 1985, Ser. No. 705,660

Claims priority, application United Kingdom, Mar. 3, 1984, 8405623

Int. Cl.[4] B63H *16/04*

U.S. Cl. 440—104 **5 Claims**



1. A rowing device suitable for use in rowing of a boat by a forward facing oarsman and comprising an outrigger means, an outrigger movement guide mechanism, and a base support means, said outrigger means having a first pivotal connection means for connection of one of a respective oar or oar support to said outrigger means, said oar having an inboard end and a handle portion, said first pivotal connection means being disposed at or in proximity to said inboard end of said oar but outboard of said handle portion of said oar and formed and arranged so as to permit pivotal movement of said oar or oar support at said first pivotal connection substantially only about a generally horizontal axis whereby application of a generally horizontal force to the oar is transmitted substantially directly through said outrigger means; and said outrigger means being mounted on said base support means to extend outwardly thereof with said movement guide mechanism acting therebetween, so as to be reciprocably displaceable longitudinally of a said boat upon application of a rowing action to said oar in use of the device, said outrigger movement guide mechanism being formed and arranged for constraining said outrigger means simultaneously to pivot about its mounting on said base support means at a rate such that said outrigger means effectively pivots about a generally vertical axis spaced substantially from the inboard end of said outrigger support means in the direction away from that in which said outrigger means extends outboard of the base support means said device also having foot engagement means and drive transmission means, said foot engagement means being drivingly connected to said outrigger means via said drive transmission means, said outrigger means and foot engagement means being formed and arranged to be disposable in a said boat with said base support means in relation to a seating position for a rower such that said foot engagement means is reciprocably displaceable relative to said seating position upon bending of a rower's legs during rowing, and upon movement of the outrigger means caused by application of a rowing action to at lease one of said oar and foot engagement means in use of the device.

4,623,315

OARLOCK

Christopher E. Carter, Fort Collins, Colo., assignor to Research Corporation, New York, N.Y.

Filed Jan. 29, 1985, Ser. No. 696,135

Int. Cl.[4] B63H *16/06*

U.S. Cl. 440—106 **12 Claims**

1. An oarlock comprising:

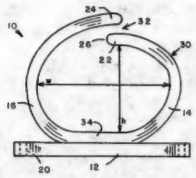
a base;

a rigid front leg extending upward from the base, and having a gnerally horizontally and rearwarly extending top portion; and

a rigid rear leg extending upward from the base, curving upwardly laterally away from the front leg, and having a generally horizontally and forwardly extending top por-

tion spaced from the top portion of the front leg and projecting above and forward of a top end of the front leg, wherein the legs form a ring for holding an oar and are positioned to prevent movement of the oar out of the ring through the space between the top portions of the legs when the oar is horizontal;

the top portion of the rear leg including a first laterally facing surface segment, and a downwardly facing surface segment extending rearward from a top end of the rear leg;



a top portion of the front leg including a second laterally facing surface segment opposite the first laterally facing surface segment, and an upwardly facing surface segment extending forward from the top end of the front leg;

the downwardly facing surface segment of the top portion of the rear leg being at a greater vertical height than the upwardly facing surface segment of the top portion of the front leg, and the laterally facing surface segments of the top portions of the front and rear legs being laterally spaced apart, wherein the top portions of the legs form a horizontally and vertically extending opening for passing the oar into and out of the ring.

4,623,316

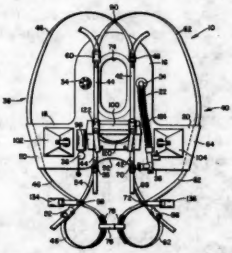
FLOTATION VEST

John C. Ratliff, P.O. Box 339, Winchester, Oreg. 97495

Filed Jul. 7, 1983, Ser. No. 511,402

Int. Cl.[4] B63C *9/08*

U.S. Cl. 441—106 **18 Claims**



1. A flotation vest for supporting the body of a user in water comprising a unitary, backless, waistcoat and collar assembly, the collar being in the general configuration of a stole, the waistcoat having a pair of side flap means located, approximately, at the waist of a user, beneath the armpits; flotation means within said waistcoat and collar assembly; harness means for securing said waistcoat and collar assembly to the body of a user, comprising a pair of strap assemblies, each strap extending along the back of a user to a terminal, generally vertical edge of a flap means with which is is engaged, said strap further extending along the front of an upper thigh region of a user, and encircling the upper thigh region of a user by being extended through a user's crotch, behind the buttock, and terminating by being connected to itself at that portion of said strap extending across the front of an upper thigh portion of said waistcoat, the portions of said straps extending from the collar to an associated flap means being free of a fixed connection to one another; and a cross strap looping together portions of said straps located at the crotch of a user, said cross strap further comprising fabric hook and loop fastener means for securing said cross strap in place.

4,623,317

METAMORPHIC RADIO-CONTROLLED TRAVELING TOY

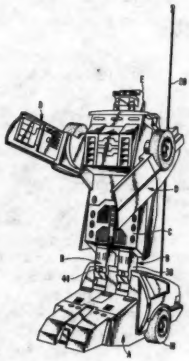
Toshiaki Nagano, Mibu, Japan, assignor to Shinsei Kogyo Co., Ltd., Tokyo, Japan

Filed May 8, 1985, Ser. No. 731,776

Claims priority, application Japan, May 9, 1984, 59-67683[U]; May 9, 1984, 59-67684[U]

Int. Cl.[4] A63H *11/10*

U.S. Cl. 446—289 **13 Claims**



1. A metamorphic radio-controlled traveling toy comprising:

(a) a traveling element, including a radio signal receiving unit for receiving control signals from a remote radio control transmitter and drive and moving means for driving and moving the toy in response to the radio signals received by said radio receiving unit;

(b) a leg element pivotably attached to the traveling element such that the leg element can be lowered and raised in relationship to the traveling element for different configurational positions of the toy;

(c) a torso element slidably attached to the leg element such that the torso element can be moved in relationship to the leg element for different configurational positions of the toy;

(d) an arm element slidably and rotatably attached to the torso element such that the arm element can be moved in relationship to the torso element for different configurational positions of the toy; and

(e) a head element slidably attached to the torso element such that the head element can be moved into the torso element and extended from the torso element for different configurational positions of the toy.

4,623,318

FIGURE WITH ROTATABLE TORSO AND VERTICALLY SWINGING ARMS

Phedon J. Tsiknopoulos, Los Angeles, and Roger H. Sweet, Long Beach, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Dec. 14, 1984, Ser. No. 682,022
Int. Cl.[4] A63H *3/20*
U.S. Cl. 446—330 1 Claim

1. A figure toy comprising:
a lower torso;
an upper torso rotatably coupled to said lower torso, said upper torso having at least one shoulder portion and at least one wall member attached thereto;
shaft means for rotatably coupling said upper and lower torsos together, said shaft means having a first end coupled to said upper torso and a second end rotatably mounted in said lower torso;
first and second gears, operably meshing together, said first gear being rotatably mounted in said lower torso with a portion of said first gear extending outside said lower torso and said second gear being coupled to said shaft means so that rotation of said first gear in one direction causes said second gear, said shaft means and said upper torso to rotate in an opposite direction;
at least one arm, each of said arms being operably coupled to one of said shoulder portions; and
means for coupling each of said arms to its said one shoulder portion so that each arm is adapted for (a) rotating 360 degrees in a first predetermined plane around a first axis with respect to its said one shoulder portion and (b) rotating in a second predetermined plane around a second axis in an outward direction from said upper torso due to centrifugal force resulting from rotation of said upper torso, said first predetermined plane being generally perpendicular to said second predetermined plane and said first axis being generally perpendicular to said second axis, said coupling means including a pulley-like member rotatably engaging one of said wall members and a disc-like member attached to said pulley-like member, said disc-like member operably engaging a slot in said arm and rotatably engaging a pin located in said slot.

4,623,319

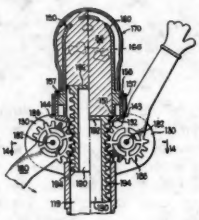
FIGURE INCLUDING EXTRUSION MEANS ACTUATED BY FIGURE APPENDAGES

John V. Zaruba, Chicago; Burton C. Meyer, Downers Grove, both of Ill.; Robert L. Lindsay, Harrison, and Michael J. Oppenheim, Cincinnati, both of Ohio, assignors to Marvin Glass & Associates, Chicago, Ill.

Continuation-in-part of Ser. No. 543,408, Oct. 19, 1983. This application Jan. 29, 1985, Ser. No. 695,886
Int. Cl.[4] A63H *3/36*
U.S. Cl. 446—373 11 Claims

1. An activity toy comprising:
a figure with a body supporting an upper member including a hollow skull with extrusion openings;
a loading opening in the member for inserting a plastic substance in the hollow skull;
extrusion means cooperating with the loading opening for forcing the plastic substance into the hollow skull and out of the extrusion openings;
a removable clear mask, means for attaching the mask about the skull with the interior of the mask spaced from the skull in the area of the extrusion openings and in a relatively tight fit with another portion of the member to substantially prevent the flow of the plastic substance out of the mask; and
a pair of appendages pivotally mounted on the body with means for actuating the extrusion means through pivotal movement of the appendages.

7. An activity toy comprising:
a figure with a body supporting an upper member including a hollow skull with extrusion openings;
a loading opening in the upper member for inserting a plastic substance in the hollow skull;



extrusion means cooperating with the loading opening for forcing the plastic substance into the hollow skull and out of the extrusion openings;
a removable clear mask formed of separable portions;
means for attaching the mask about the skull with the interior of the mask spaced from the skull in the area of the extrusion openings and in a relatively tight fit with another portion of the member to substantially prevent the flow of the plastic substance out of the mask;
clamping means for securing the mask portions together including a detachable hair piece for securing the portions together remote from the loading opening in the upper member; and
a pair of appendages pivotally mounted on the body with means for actuating the extrusion means through pivotal movement of the appendages.

4,623,320

FLYWHEEL CONTROLLED TOY

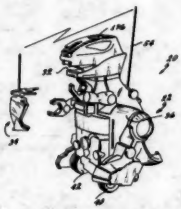
Katsumi Kakizaki, and Yutaka Ajiro, both of Tokyo, Japan, assignors to Tomy Kogyo Co. Inc., Tokyo, Japan

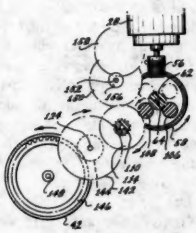
Filed Oct. 25, 1984, Ser. No. 664,567
Claims priority, application Japan, Oct. 27, 1983, 58-165421[U]
Int. Cl.[4] A63H *29/22*
U.S. Cl. 446—462 5 Claims

1. A toy which comprises:
a housing;
a motor mounted on said housing, said motor producing a rotational output in a constant direction to move portions of said toy;
motor control means mounted on said housing in operative association with said motor, said motor control means being for controlling said motor by accelerating and decelerating said motor;
a flywheel rotatably mounted on said housing;
motion transfer means located on said housing in operative association with said flywheel and said motor for transferring rotation of said motor to said flywheel whereby said flywheel can be rotated by said motor;
switch means mounted on said housing in operative association with said flywheel said switch means including a

switching member mounted to said housing for movement from at least a first position to a second position with respect to said housing, means including said flywheel for moving said switching member from one to the other of said positions and back again, respectively, in response to acceleration and deceleration of said motion transfer means with respect to said flywheel;

output means mounted on said housing in operative association with said motor whereby said motor drives said output means, said output means being capable of outputting a selected one of at least two independent outputs, said output means further operatively associated with said switch means whereby said output means outputs one of its outputs in response to said switching member being in





one of said positions and said output means outputs a further of its outputs in response to said switching member being in the other position;

said switch means including at least one switch gear operatively associated with said motor so as to be rotated by said motor;

said switch means further including a positioning member rotatably mounted on said housing for changing the position of said switch gear relative to said motor, said switch gear being eccentrically mounted on said positioning member so as to rotate in association with said positioning member whereby it can move from a position effecting its use in one of said outputs to another position effecting its use in another of said outputs.

4,623,321

UNIVERSAL COUPLING FOR TRANSMITTING A MOVEMENT OF ROTATION AND A TORQUE BETWEEN TWO SHAFTS OPERATING AT A LARGE ANGLE

Michel A. Orain, Conflans Sainte Honorine, France, assignor to Glaenzer Spicer, Poissy, France

Filed Oct. 30, 1984, Ser. No. 666,378

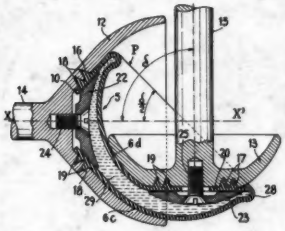
Claims priority, application France, Nov. 8, 1983, 83 17737

Int. Cl.[4] F16D *3/10, 3/50*

U.S. Cl. 464—7 **13 Claims**

1. A universal coupling for transmitting rotation and torque between two shafts, each said shaft having an axis of rotation, with said axes having an angle of 0° to 90° with respect to each other and intersecting at a center of rotation of said coupling, said coupling comprising:

means for transmitting rotation and torque between said shafts, said transmitting means comprising at least one annular flexible wall member having opposite end portions and a spherical region between said end portions and including first and second spherical segments extending from respective said end portions, said spherical region having a single center, said first spherical segment being turned back with respect to said second spherical segment and positioned radially inwardly thereof, with said first and second spherical segments being connected by an



annular curved bend of the material of said flexible wall; and

means for connecting said end portions of said flexible wall to respective said shafts such that said annular bend has, for a given axis extending perpendicular to said axis of rotation of at least one of said shafts and passing through said coupling center, a flexion axis about which said annular bend is movable with said flexion axis extending perpendicular to said given axis and said at least one axis of rotation and passing through said coupling center, and said annular curved bend having a flexion center which coincides with said coupling center.

4,623,322

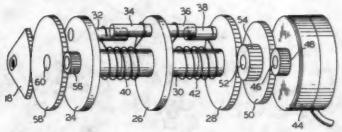
MECHANICAL DRIVE WITH BI-DIRECTIONAL OVERRIDE

Robert A. Melchior, Southbury, Conn., assignor to North American Philips Corporation, New York, N.Y.

Filed Dec. 3, 1979, Ser. No. 99,801

Int. Cl.[4] F16D *1/12, 3/10*

U.S. Cl. 464—160 **3 Claims**



1. Apparatus for transferring motion which comprises: a first member mounted for movement in first and second directions, a second member mounted for movement in first and second directions, a third member mounted for movement responsive to movement of at least one of said first and second members in either said first or second direction, said first and second members having interferring surfaces which transfer motion therebetween in said first direction, said second and third members having interferring surfaces which transfer motion therebetween in said second direction, first means for transferring motion between said first and second members in said second direction responsive to a force greater than a predetermined minimum, and second means for transferring motion between said second and third members in said first direction responsive to a force greater than a predetermined minimum, said first

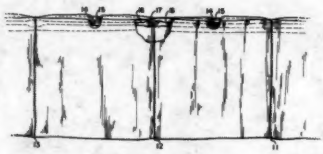
means and second means each comprising a first torsion coil spring which is preloaded to provide a non-linear force characteristic, each of said torsion coil springs being wound more tightly (to a smaller diameter) when motion is transferred thereby.

4,623,323

ROTATING DISK INTERMITTENT ORIENTOR FOR DRAW TAPE

Fox J. Herrington, Holcomb, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 6, 1985, Ser. No. 795,578
Int. Cl.[4] B05B *43/00*
U.S. Cl. 493—338 **10 Claims**



1. Apparatus for producing thermoplastic tape having a relatively thin and narrow central portion between thick and wide end portions comprising:

a plurality of rotating tracks;

clips guided by said tracks;

means for moving said clips outwardly along said tracks as they rotate; and

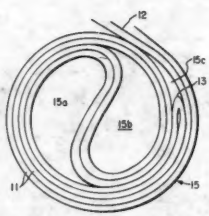
means for feeding tape to said clips near the center of rotation and for removing the said tape from said clips at a greater radial distance from the center of rotation whereby said tape is stretched during rotation to produce said thin and narrow central portions of said tape.

4,623,324

METHOD AND APPARATUS FOR MAKING FUEL ELEMENTS FROM NEWSPAPER SHEETS OR THE LIKE

Albert J. Zulkowitz, Woodmere, N.Y., assignor to A. Zulkowitz Associates, Woodmere, N.Y.

Filed Oct. 26, 1984, Ser. No. 665,160
Int. Cl.[4] B31F *7/00*
U.S. Cl. 493—462 **11 Claims**



1. A method for preparing a fuel element from a newspaper section formed of one or more newspaper sheets or the like, comprising the steps of:

folding said newspaper section with the opposite folded portions flat against and in contact with one another, and only partially overlapping, so that one of the edges of said newspaper section is substantially parallel to the opposite edge with each edge spaced from its opposite edge in a direction substantially parallel to or in the plane of said sheets, so that a portion of the folded section has double thickness and another portion has a single thickness;

rolling said folded newspaper section into substantially a cylindrical form; and

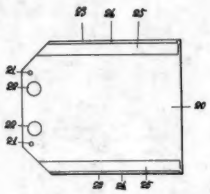
tying said rolled section to prevent said bundle from unrolling, whereby a single combustible fuel element results.

4,623,325

FOLDING INSERT FOR FORMING A JACKET

Yoshinobu Mori, Omihachiman, and Akira Tada, Toyonaka, both of Japan, assignors to O-M Limited, Osaka, Japan

Filed Nov. 30, 1983, Ser. No. 557,226
Claims priority, application Japan, Dec. 3, 1982, 57-183766[U]
Int. Cl.[4] B31B *1/28, 1/56*
U.S. Cl. 493—468 **3 Claims**



1. A folding insert for forming a substantially square envelope-shaped jacket for holding a magnetic disk to form a flexible disk cartridge, the jacket being formed by folding a rectangular sheet of thermoplastic resin material substantially in half with one portion on top of the other, the lower portion having flaps along the side edges which are then folded around the folding insert and adhered to the folded over upper portion of the rectangular sheet, said folding insert comprising:

a flat plate having substantially the same width as the width of the rectangular sheet;

projection means extending along both side edges of said flat plate around which the flaps are to be folded and which project slightly above the plane of the upper surface of said flat plate;

whereby the flaps of the rectangular sheet can be bent more than 180° around said projection means so that upon flyback of the flaps, they will be positioned substantially 180° from the plane of the lower portion from which they were folded.

4,623,326

CENTRIFUGAL CONTAMINANT SEPARATION FOR A LUBRICATING SYSTEM

Bruce A. Fraser, Manlius, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Oct. 7, 1985, Ser. No. 784,294
Int. Cl.[4] B01D *45/12*; B04B *1/00, 5/12*
U.S. Cl. 494—34 **4 Claims**

1. A multi-stage centrifugal contaminant separation system for a lubricant supply comprising:

a source of lubricant;

bearing head means including a converging inlet extending into said source of lubricant;

crankshaft means adapted to be rotated about an axis and including an end within said bearing head means and a portion received in a bearing relationship by said bearing head means;

distribution annulus means within said bearing head means secured to said end and rotatable with said crankshaft means;

a supply chamber defined by said end and said distribution annulus means;

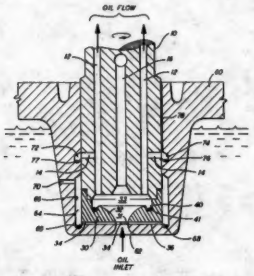
said annulus means and said converging inlet coacting to define a converging-diverging flow path including a throat section at the interface of said bearing head means

and said annulus means and discharging into said supply chamber;

a plurality of radial grooves formed in said annulus means at the interface and in fluid communication with said throat section;

a first annular chamber located radially outward of, and in fluid communication with, said radial grooves and including a portion defining a first annular contaminant collection groove;

first fluid passage means providing a fluid path from said first annular chamber to said source of lubricant;



a second annular contaminant collection groove formed in said annulus means radially outward of the diverging portion of said converging-diverging flow path and defining the circumferential extent of said converging-diverging flow path and defining a portion of said supply chamber; and

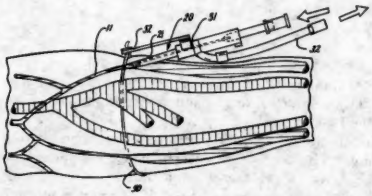
at least one oil galley having an axially extending portion radially spaced from said axis and in fluid communication with said supply chamber for receiving lubricant therefrom and supplying said lubricant to a lubricant distribution system.

4,623,327

METHOD AND APPARATUS FOR USING DUAL-LUMEN CATHETERS FOR EXTRACORPOREAL TREATMENT

Sakharam D. Mahurkar, 6171 N. Sheridan, Suite 1112, Chicago, Ill. 60660

Filed Feb. 12, 1985, Ser. No. 700,695
Int. Cl.[4] A61M *1/03*
U.S. Cl. 604—4 **10 Claims**



1. A method of extracorporeal hemodialysis, hemofiltration, plasmapheresis, and cytopheresis treatments of the human blood, requiring continuous blood flow at high glow rates in both directions between the patient and the extracorporeal treatment equipment, in which a catheter having first and second lumens and respective first and second lumen openings axially displaced from each other is inserted into a venous segment so that blood can be withdrawn through one lumen of the catheter and returned through the other lumen, said method comprising the steps of

inserting said catheter into said venous segment,

occluding said venous system at a location between said respective first and second lumen openings to engorge the portion of the venous system in which the withdrawal lumen is located, thereby producing a venous pool of blood in the engaged portion of the vein sufficient to permit blood to be withdrawn at relatively high flow rates,

applying a suction to the withdrawal lumen to remove blood from said venous pool at a relatively high rate, and treating the withdrawn blood in extracorporeal treatment equipment, and

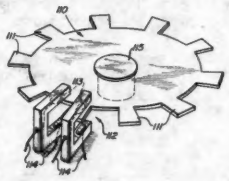
returning blood to the non-engorged portion of said venous segment through the return lumen under pressure produced by the extracorporeal treatment equipment.

4,623,328

PUMP MONITOR FOR PHOTOACTIVATION PATIENT TREATMENT SYSTEM

Thomas P. Hartranft, Safety Harbor, Fla., assignor to McNeilab, Inc., Fort Washington, Pa.

Filed Oct. 29, 1984, Ser. No. 665,826
Int. Cl.[4] A61M *1/03*; G01D *5/34*
U.S. Cl. 604—4 **5 Claims**



1. A stepper motor monitor for use in a blood treatment system for photoactivating extracorporeally a photoactivatable reagent in contact with a patient's blood, said system including an infusion pump driven by a shaft from a stepper motor, said monitor comprising:

periodic blocking means mounted on said stepper motor shaft for rotation therewith; and

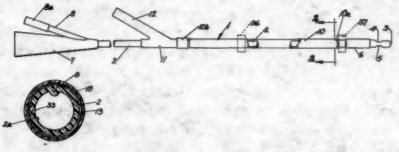
at least two sensors for generating a signal responsive to the periodicity of said blocking means, said sensors being stationary with respect to said periodic blocking means and arranged whereby one sensor is always unblocked and both sensors must be unblocked before one sensor can become blocked and in accordance with the said signals generated the rate or absence of stepper motor shaft rotation may be determined.

4,623,329

DRAINAGE AND INFUSION CATHETERS HAVING A CAPILLARY SLEEVE FORMING A RESERVOIR FOR A FLUID ANTIMICROBIAL AGENT

James L. Drobish; Eldon G. Spletzer, both of Cincinnati, and Hugh A. Thompson, Fairfield, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 15, 1983, Ser. No. 561,840
Int. Cl.[4] A61M *25/00*
U.S. Cl. 604—29 **13 Claims**



4. A catheter for drainage of or infusion into a body cavity, said catheter comprising an elongated tubular shaft having a distal end with at least one port near said distal end to be located in said body cavity to be treated and an open proximal end adapted to be connected to a drainage or infusion conduit, a sleeve extending about and longitudinally of said shaft from a point near said at least one port toward said proximal end of

said shaft, said sleeve forming a concentric reservoir for a fluid antimicrobial agent, said sleeve being permeable to the controlled passage of said fluid antimicrobial agent by diffusion, filling means at said proximal end of said shaft for supplying said fluid antimicrobial agent to said reservoir and for replenishing said fluid antimicrobial agent therein, said sleeve having a distal end sealed to said shaft, said sleeve having a proximal end sealed to one of said shaft and said filling means, and distribution means for distributing said fluid antimicrobial agent within said reservoir about the periphery of said reservoir and for transporting said fluid antimicrobial agent along the length of said reservoir, said distribution means comprising a plurality of capillary grooves formed in the exterior surface of said shaft within said reservoir, said last mentioned grooves being in parallel side-by-side relationship and extending the length of said shaft within said reservoir.

4,623,330

GAS DIFFUSION-LIMITED CONTROLLED RELEASE DEVICES

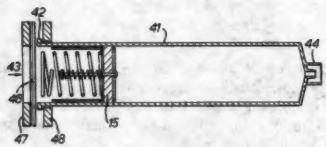
Ralph H. Laby, 52 Bryson Street, Canterbury, Victoria, and Bruno Kautzner, 20 McLaurin Road, Murrumbeena, Victoria, both of Australia

Filed Feb. 16, 1983, Ser. No. 466,949

Claims priority, application Australia, Feb. 16, 1982, PF2729

Int. Cl.[4] A61M *5/00*

U.S. Cl. 604—63 **8 Claims**



1. A device for delivering a solid or liquid paste material at a controlled rate comprising a hollow tubular body having one end which is at least partially open and another end which is closed, a gas tight plunger located inside the body so as to be capable of slidable movement within the body, the plunger comprising a disc of waxy solid material having lubricating properties which decreases the yield stress and frictional resistance between the plunger and the body, compression means for providing compressive forces on the disc in the axial direction, thereby urging the disc to expand radially and a spring means under compression located between the closed end and the plunger for urging the plunger towards the open end as the spring means expands, said material being locatable between the plunger and open end so that movement of the plunger towards the open end dispenses material through the open end of the device, wherein said device is provided with a gas permeable membrane at or adjacent the closed end of the body, such that gas from outside of the body may diffuse through the membrane internally into the body behind the plunger at a controlled rate to thereby control movement of the plunger under the influence of the spring means to dispense the material at a controlled rate in use.

4,623,331

APPARATUS FOR THE REGISTRATION OF DROPS IN AN INFUSION DEVICE

Göran Cewers, Lund, and Sven-Gunnar Olsson, Soedra Sandby, both of Sweden, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany and Siemens Elema AB, Solna, Sweden

Filed Dec. 6, 1984, Ser. No. 678,675

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1983, 3344632

Int. Cl.[4] A61M *5/00*

U.S. Cl. 604—65 **22 Claims**

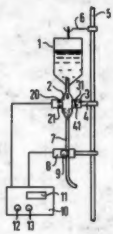
1. A drop registration apparatus for use with an infusion device having an infusion fluid reservoir, a drip chamber, and a tube in fluid communication, said apparatus comprising:

at least one light source;

at least two light sensors disposed such that drops in said drip chamber fall in sequence between said light source and each of said light sensors;

at least two detector channels respectively allocated to said light sensors, each detector channel independently generating a detector output signal when the light sensor allocated thereto senses a drop;

a logic means having inputs connected to said detector channels for generating a logic output signal indicating proper operation of said infusion device when at least one of said detectors generates a detector output;



a discriminator means having inputs connected to said detector channels, said discriminator means generating a discriminator output signal if a detector output signal is not received from all detector channels within a first selected time period; and

a fault/alarm means having an input connected to said discriminator means for generating a fault/alarm signal upon receipt of said discriminator output signal.

4,623,332

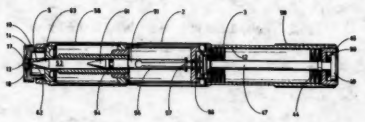
NEEDLELESS JET INJECTOR

Istvan Lindmayer, Pierrefonds, and Karim Menassa, St. Laurent, both of Canada, assignors to Patents Unlimited Ltd., Hamilton, Bermuda

Filed Apr. 14, 1983, Ser. No. 485,046

Int. Cl.[4] A61M *11/00*

U.S. Cl. 604—68 **2 Claims**



1. A needleless hypodermic injector, comprising:

a first substantially cylindrical section and a second substantially cylindrical section movably mounted in a first end of the first section;

wherein the first section comprises a hollow cylinder defining a chamber for a substance to be administered, the chamber having therein an orifice at a second end of the first section, and a piston slidably mounted in the hollow cylinder; and

the second section comprises spring means in the form of a plurality of disc springs for driving the piston in the first section from a retracted position in which the hollow cylinder contains the substance to be administered to an extended position in which the substance is substantially completely discharged through the orifice from the chamber; a bushing slidably mounted between the piston and the spring means and engaging the piston as it travels from the retracted position to the extended position; and latch means for locking the bushing and thereby the spring means in the retracted position;

a washer means on said piston spaced from the bushing toward the orifice when the bushing is locked in the retracted position by the latch means;

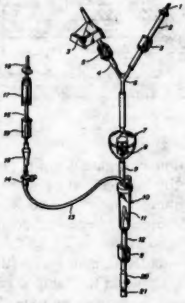
whereby, when the latch means is released from the bushing, the spring means drives the bushing against the washer means, driving the piston toward the orifice in the hollow cylinder to provide a skin piercing pressure to the substance to be discharged through the orifice and thereafter moves the piston to the extended position.

4,623,333

FRIED-GRANT RAPID SOLUTION ADMINISTRATION SET WITH INTEGRAL HEAT EXCHANGER

Steven J. Fried, 1729 Willow Park Ct., Powell, Ohio 43065

Filed Sep. 28, 1984, Ser. No. 655,379
Int. Cl.[4] A61M 5/14
U.S. Cl. 604—80 **12 Claims**



12. A pump free intravenous set for the rapid infusion of physiologic solutions to treat a patient in hypovolemic shock comprising

an infusion line having means at its distal end for connecting the line to a central venous pathway of the patient,

inlet means mounted on the proximal end of the infusion line for connecting the line to a source of blood products at a temperature substantially below normothermic temperature,

and a heat exchanger disposed in the infusion line through which the blood products flow for heating the products to place them at a normothermic temperature,

said infusion line, inlet means, means on the distal end of the line and the heat exchanger being sized to receive and discharge said products at a rate of approximately 1500 milliliters per minute in response to a pressure head established by the difference in height of the proximal and distal ends of the infusion line.

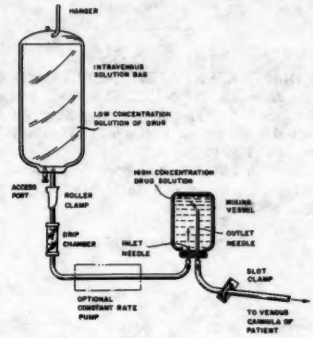
4,623,334

INTRAVENOUS DRUG INFUSION APPARATUS

James G. Riddell, Belfast, Northern Ireland, assignor to Vanderbilt University, Nashville, Tenn.

Continuation-in-part of Ser. No. 472,926, Mar. 7, 1983, abandoned. This application Apr. 15, 1985, Ser. No. 723,215
Int. Cl.[4] A61M 37/00
U.S. Cl. 604—85 **12 Claims**

1. Intravenous drug infusion apparatus for optimized drug delivery, comprising a closed container with a first sterile intravenously administerable aqueous carrier containing an intravenously administerable drug at a low maintenance concentration, said container having an outlet positionable at the bottom thereof for gravity outflow, a closed rigid mixing vessel of smaller volume than said container having therein a second sterile intravenously administerable aqueous carrier containing a high loading concentration of said drug, said mixing vessel having inlet means connected to said container outlet by conduit means, said inlet means terminating in a hollow needle having an inlet end communicating with the interior of said vessel, said needle being dimensioned and arranged to provide a turbulent mixing action in said vessel, said vessel having outlet means with its inner end spaced from said needle inlet end, the construction and arrangement of said inlet and outlet means providing the only mixing means associated with said vessel, and delivery conduit means connected to the outer end of said outlet means for intravenous delivery of the admixed carrier to a patient, said apparatus being adapted to



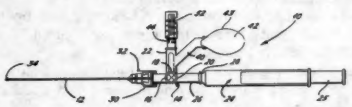
deliver a close approximation of an exponentially decreasing concentration of said drug during the transition from said high loading concentration down to said low maintenance concentration.

4,623,335

APPARATUS AND METHODS FOR DETECTING PROBE PENETRATION OF HUMAN INTERNAL TARGET TISSUE HAVING PREDETERMINED INTERNAL PRESSURE

Anthony Jackson, 13 Cayuse La., Rancho Palos Verdes, Calif. 90274

Filed Oct. 9, 1985, Ser. No. 785,923
Int. Cl.[4] A61M 5/00
U.S. Cl. 604—118 **21 Claims**



1. Apparatus for detecting probe penetration of human internal target tissue and injecting a therapeutically desired substance into a selected area proximate said target tissue, comprising:

a. an axially elongated hollow needle-like probe;

b. a valve member having first, second and third orifices and including means for optionally connecting any two or all three of said orifices together, said first orifice being connected to said probe hollow interior;

c. means for pumping medication into said probe interior through said valve member via said third orifice;

d. a conduit connected to said second orifice of said valve member;

e. moveable means slideably resident within said conduit and including passage means connecting a first conduit interior portion which is between said moveable means and said valve with an orifice formed in a lateral surface of said movable means which slideably contacts said conquit wall, for limiting pressure within said conduit and said probe to said predetermined internal pressure and providing visible indication that said predetermined internal pressure has been reached within said first conduit and said probe;

f. said conduit having an orifice in the wall thereof for com-

munication of said moveable means lateral surface orifice with ambient atmosphere exterior said conduit;

g. means communicating with said conduit intermediate said movable means and said valve, for increasing pressure within said conduit until said moveable means lateral surface orifice communicates with said passageway formed in the wall of said conduit.

4,623,336

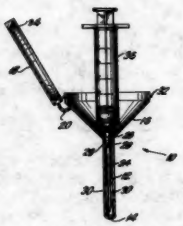
DISPOSABLE SAFETY NEEDLE SHEATH

James J. Pedicano, 222 N. Van Dien Ave., Ridgewood, N.J. 07450; James G. Kane, 3700 Oliver St. NW., Washington, D.C. 20015, and Ernest Pedicano, 11 Hertford St., New Rochelle, N.Y. 10801

Filed May 11, 1984, Ser. No. 609,343

Int. Cl.[4] A61M *5/32*

U.S. Cl. 604—192 **27 Claims**



1. A disposable safety needle sheath for disposal of a used or otherwise unsanitary needle comprising:

sleeve means closed at one end thereof and open at the opposite end thereof for receiving a used, unsanitary needle inserted therein,

needle retaining means within said sleeve means for grasping and holding a used, unsanitary needle inserted into said sleeve means;

wide aperture needle receiving means communicating with the open end of said sleeve means for subtantially covering and protecting the fingers of a user grasping said sleeve means and for guiding a used, unsanitary needle towards the open end of said sleeve means;

sheath closure means for closing the open end of said sleeve means after a used, unsanitary needle has been inserted into said sleeve means; and

means for substantially preventing said sheath closure means from being reopened after said sheath closure means has assumed the closed position closing the open end of said sheath, thereby preventing access to said used, unsanitary needle contained in said sheath.

4,623,337

LIQUID DISPENSING APPARATUS

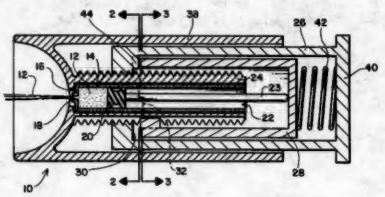
David M. Maurice, Atherton, Calif., assignor to Alpha Group, Inc., Laguna Beach, Calif.

Filed Mar. 8, 1984, Ser. No. 587,663

Int. Cl.[4] A61M *35/00*

U.S. Cl. 604—298 **15 Claims**

1. Apparatus for the repetitive dispensing of a predetermined quantity of a liquid comprising a cylinder having a first end and a second end, the liquid to be dispensed within said cylinder, the first end of said cylinder having a restricted opening through which the liquid may pass in response to pressure applied to the liquid, a plunger extending into said cylinder from the second end, a plunger moving member operatively connected to said plunger for moving said plunger in steps toward the first end of said cylinder, an actuating member engaging said plunger moving member by means of opposed surfaces on each said plunger moving and actuating members, one of the opposing surfaces constituting a ramped cam having at least one step and the other of the opposing surfaces having



at least one projection engaging the ramped cam opposing surface, and means for biasing said opposed surfaces toward one another, said plunger moving and actuating members being rotatable with respect to each other, the opposing surfaces being configured and positioned so that rotation of said plunger moving and actuating members with respect to each other moves the projection on the ramped cam opposing surface, and movement of the projection over the stop advances said plunger toward the one end a distance corresponding to the step length.

4,623,338

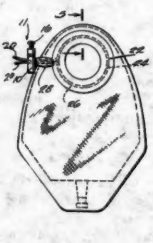
LINE CLAMP FOR AN OSTOMY BAG

Robert Larson, 475 Green Bay Rd., Cedarburg, Wis. 53012

Filed Oct. 28, 1985, Ser. No. 792,016

Int. Cl.[4] A61F *5/44*

U.S. Cl. 604—339 **1 Claim**



1. Surgical apparatus comprising,

a colostomy plate fitting having an annular mounting flange,

a colostomy pouch having a neck fitting over said flange,

an elastic cord, having terminal ends wrapped around said neck to hold it on said flange,

a bead having a through-bore,

the ends of said cord passing through said bore and said bead being substantially adjacent said flange,

a clamp including an elongated body, a transverse bore in said body, an axial hole originating at one end of said body and extending past said bore, a transverse slot in said body originating closer to said one end and tangentially intersecting said bore closer to said one end, and a screw threaded into said hole and extending into said bore,

said cord ends being positioned in said bore of said clamp,

said clamp being positioned next to said bead,

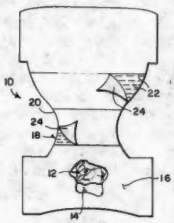
and said screw being turned down on said ends.

4,623,339

PRECIOUS BABY DIAPER

Joann Ciraldo; Joseph R. Ciraldo, and George Spector, all of 233 Broadway Rm 3615, New York, N.Y. 10007

Filed Aug. 15, 1985, Ser. No. 765,805
Int. Cl.[4] A61F *13/16*
U.S. Cl. 604—359 4 Claims



1. An improved disposable diaper of the type having a centrally located absorbent, porous, fibrous core section, a moisture impermeable exterior liner positioned on one side thereof and a moisture permeable interior liner positioned on other side thereof wherein the improvement comprises:

(a) a pouch secured on inner surface of said interior liner at a crotch portion of said diaper, said crotch portion having opposite sides, said pouch containing lotion/ointment therein and having a plurality of minute perforations; and

(b) an adhesive strip for covering said perforations so that when said adhesive strip is removed said lotion/ointment will come out onto skin of a baby when said diaper is placed onto said baby;

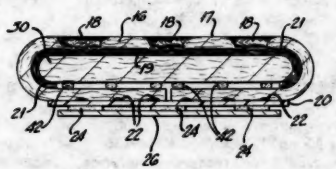
(c) means secured to said diaper manually actuated to remove said adhesive strip.

4,623,340

ABSORBENT PRODUCT WITH COLOR CONTRASTED COVER PATTERN

Thomas J. Luceri, Little Ferry, N.J., assignor to Personal Products Company, Milltown, N.J.

Filed Sep. 16, 1983, Ser. No. 532,890
Int. Cl.[4] A61F *13/16*
U.S. Cl. 604—385 R 24 Claims



1. In a product for absorbing body fluids comprising:

an outer cover having an exterior and interior surface comprising thermoplastic material;

an interior layer in face-to-face relationship with the interior surface of said outer cover;

said outer cover and said interior layer being co-embossed to impose a pattern of depressed areas and undepressed areas into the exterior surface of said outer cover;

the improvement wherein:

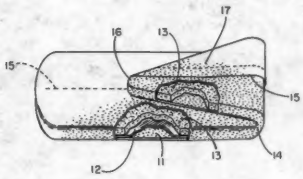
said outer cover is light colored and said interior layer is dark colored, relative to each other, and said undepressed areas of said cover are opaque relative to said depressed areas whereby said depressed areas color contrast with said undepressed areas.

4,623,341

FEMININE NAPKIN WITH UNSECURED TOP LAYER

Robert J. Roeder, Outagamie County, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Sep. 6, 1983, Ser. No. 529,807
Int. Cl.[4] A61F *13/16*
U.S. Cl. 604—385 R 14 Claims



12. A method for making a combination sanitary napkin and interlabial pad comprising:

(a) positioning a baffle on a defined portion of an absorbent batt said batt generally decreasing in width from one end to the other;

(b) overwrapping said absorbent layer with a fluid pervious wrap;

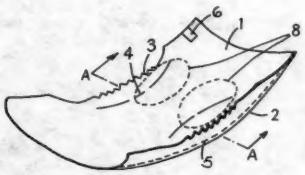
(c) folding said absorbent batt such that the end of decreased width forms an upper absorbent layer movable with respect to the lower absorbent layer, and smaller in area than said lower absorbent layer which is the remainder of said batt with said baffle being positioned on the bottom of said lower absorbent layer wherein said upper absorbent layer decreases in width from the fold to the distal end of said upper absorbent layer.

4,623,342

DISPOSABLE DIAPER

Osamu Ito, Utsunomiya; Hiroshi Mizutani, Yashiyo, and Kazunori Nishizawa, Funabashi, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Nov. 5, 1984, Ser. No. 668,234
Claims priority, application Japan, Nov. 7, 1983, 58-208705
Int. Cl.[4] A61F *13/16*
U.S. Cl. 604—385 A 9 Claims



1. A disposable diaper comprising a liquid-permeable surface sheet, a liquid-impermeable backing sheet, an absorbent pad sandwiched between said two sheets, water-absorptive, shrinkable fiber strings, contractable lengthwise and rendered stretchable on contact with water are secured to said two sheets, said fiber strings being disposed longitudinally to the diaper in parallel along, and in non-overlapping relation to the longitudinal edges of said pad, the longitudinal edge portions of the surface sheet outside the water-absorptive, shrinkable fiber strings and a portion of said surface sheet overlying the absorbent pad being partly bonded together at two spots at about the midpoint of the length of both longitudinal sides of said diaper, the distance between said two bonded spots being at least 50 mm and said bonded spots themselves each being 10 to 50 mm long, and elastic stretch members, each being at least

70 mm long and having a combined elastic force of 20 to 600 g, are disposed longitudinally on both longitudinal edges of the diaper, spaced apart at least 5 mm from said bonded spots.

4,623,343

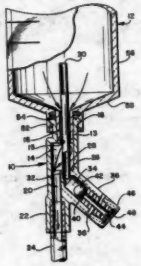
PARENTERAL FLUID ADMINISTRATION APPARATUS AND METHOD

Thomas C. Thompson, McKinney, Tex., assignor to Quest Medical, Inc., Carrollton, Tex.

Filed Mar. 19, 1984, Ser. No. 590,982

Int. Cl.[4] A61B *19/00*

U.S. Cl. 604—405 **6 Claims**



1. A system for delivering a measured dose of medication comprising:

a syringe with plunger retracted to define a space containing the desired dose, and having a narrow male luer-tapered outlet;

a connector having a female luer-tapered inlet secured to the syringe outlet, and carrying an air vent tube extending through the syringe outlet into the interior of the syringe, the air vent tube encompassing a single fluid flow path and being of sufficiently small size to permit liquid to flow out from the syringe into the connector around the outside of the tube.

4,623,344

DOSING MEANS FOR A HYPODERMIC SYRINGE

Marja Eriksson, Upsala, Sweden, assignor to Duma AB, Sweden

Filed May 2, 1985, Ser. No. 729,531

Claims priority, application Sweden, May 10, 1984, 8402527

Int. Cl.[4] A61B *19/00*

U.S. Cl. 604—407 **17 Claims**

1. A dosing means for facilitating drawing a predetermined volume of liquid, to be injected, into a hypodermic syringe having an axially displaceable plunger projecting from the syringe, the dosing means including:

a first positioning element providing a formation to receive and locate the syringe body,

first limiting means capable of limiting withdrawal of the syringe plunger to a first axial position with respect to the first positioning element,

second limiting means capable of limiting withdrawal of the syringe plunger to a second axial position with respect to the first positioning element, further from the first positioning that the first axial position, and

a rotatable member, on which said first and second limiting means are mounted, means mounting said rotatable member for rotation relative to said first positioning element between a position in which said first limiting means lies in the path of movement of the free end of the plunger of the syringe located in said first positioning element, and a position in which said second limiting means lies in the path of movement of the free end of the plunger of the syringe so located and the first limiting means does not.

4,623,345

CAPSULE FOR ADMINISTRATION TO RUMINANTS

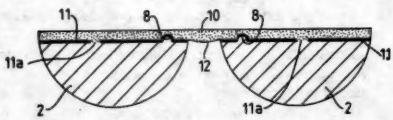
Ralph H. Laby, 52 Bryson Street, Canterbury, Victoria, Australia

Filed Apr. 17, 1984, Ser. No. 601,213

Claims priority, application Australia, Apr. 22, 1983, PF 9026/83

Int. Cl.[4] A61M *31/00*

U.S. Cl. 604—892 **11 Claims**



1. A capsule for administration to a ruminant, comprising two body portions comprising magnesium or an alloy thereof, and hinge means pivotally connecting the body portions for pivotal movement between a relatively small cross-sectional configuration in which the capsule can be administered per os into the rumen, and a relatively larger cross-sectional configuration adopted within the rumen to resist regurgitation, said hinge means comprising a flexible material made electrically conductive by means of a matrix of conductive particles, the arrangement being such that when the capsule is in the rumen the conductive particles act as a cathode and the body portions as anodes.

4,623,346

ISOBUTYLENE POLYMER ACTIVE COMPOUND RELEASE SYSTEMS

Miklos von Bittera, Leverkusen; Rolf Dhein, Krefeld; Rolf-Volker Meyer, Krefeld, and Roland Rupp, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 27, 1984, Ser. No. 675,160

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1983, 3344691

Int. Cl.[4] A61K *9/60, 9/70;* A61L *15/00*

U.S. Cl. 604—896 **12 Claims**

1. In a therapeutic system including a covering layer which is essentially impermeable to an active compound, an active compound reservoir layer and a protective layer which can be pulled off and which is essentially impermeable to the active compound, the improvement comprising the reservoir layer containing about 1–30% of active compound, about 30–60% by weight of a polymer selected from the group consisting of polyisobutylenes, copolymers of polyisobutylenes and mixtures thereof, 30–60% by weight of an entraining agent selected from the group consisting of oils, fatty acid esters, triglycerides, alcohols, fatty acids and mixtures thereof and

2–40% by weight of a resin selected from the group consisting of rosin, dehydrogenated rosin, glycerol esters of dehydrogenated rosin, glycerol esters of rosin gum, hydrogenated rosin, glycerol esters of hydrogenated rosin, pentaerythritol esters of hydrogenated rosin, methyl esters of hydrogenated rosin, polymerized rosin, glycerol esters of polymerized rosin, terpene resins, coumarone/indene resins, hydrogenated petroleum resins, rosin modified by maleic anhydride, C_5-petroleum resins, half-esters of styrene/maleic acid copolymers, and mixtures thereof, in addition to the active compound.

4,623,347

ANTITHROMBOGENIC ELASTOMER PRODUCTS

Kazuaki Kira, Kobe, Japan, assignor to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 606,559, May 7, 1984, Pat. No. 4,528,343, which is a continuation of Ser. No. 384,210, Jun. 2, 1982, abandoned. This application Apr. 8, 1985, Ser. No. 721,018

Claims priority, application Japan, Jun. 22, 1981, 56-97270; Apr. 27, 1982, 57-72298

The portion of the term of this patent subsequent to Jul. 9, 2002, has been disclaimed.

Int. Cl.[4] A61F *2/06*

U.S. Cl. 623—1 **8 Claims**

1. A method for the prevention of the clotting of blood in contact with medical devices comprising forming at least the blood contact surfaces of said devices from an elastomer comprising thermoplastic polyurethane or polyurethane urea containing 4 to 15 weight % of polysiloxane having a molecular weight of 500 to 10,000 in the main chain, and containing a polyether or a polyester having a molecular weight of 500 to 6,000 as a soft segment other than said polysiloxane.

4,623,348

PERCUTANEOUS SINUS TRACT MAINTENANCE PROSTHESIS

Fredric Feit, 1151 Brighton Beach Ave., Brooklyn, N.Y. 11235

Filed Aug. 13, 1984, Ser. No. 639,929

Int. Cl.[4] A61F *2/02*; A61B *19/00*

U.S. Cl. 623—11 **11 Claims**

1. A prosthetic device for maintaining the integrity of a sinus tract formed by a catheter during an initial catheterization for the purposes of medical procedures to enable said tract to be repeatedly used for subsequent catheterization comprising,

(a) an outer hollow tubular member of uniform diameter and uniform wall thickness for the entire extent thereof adapted to be guided by said catheter into said initially formed sinus tract in surrounding relation with the catheter in the tract formed during said initial catheterization, with flanging means at the external end of said outer hollow tubular member to rest on the epidermis at the beginning of said sinus tract,

(b) an inner solid cylindrical member adapted to be inserted into said outer hollow tubular member for sealing said sinus tract after said catheter has been withdrawn from said sinus tract following said medical procedure requiring catheterization,

(c) whereby subsequent removal of said inner solid cylindrical member enables insertion of a new sterile catheter into said outer hollow tubular member along the same initially formed sinus tract to permit another catheterization medical procedure through said tract, and whereby said outer hollow tubular member may easily be replaced while the catheter remains in the tract.

4,623,349

OSTEAL PROSTHESIS AND THE PRODUCTION THEREOF

Gerald Lord, 4, rue Thiers, 75116 Paris, France

Filed Jun. 27, 1983, Ser. No. 508,041

Claims priority, application France, Jun. 29, 1982, 82 11412

Int. Cl.[4] A61F *2/30*

U.S. Cl. 623—18 **6 Claims**

1. An osteal prosthesis comprising:

an elongate stem for insertion and fixing in bone;

means at a proximal end of said stem for permitting said stem to be inserted in bone by initial insertion in said bone of a distal end of said stem opposite said proximal end; and

spline means on said stem and extending generally in the direction of elongation of said stem, said spline means comprising:

(a) a plurality of raised spline elements tapered so as to have increased width towards said proximal end, and

(b) a plurality of troughs defined between said spline elements, said troughs being tapered so as to have increased width towards said distal end,

wherein the cross-sectional profiles of said spline elements and troughs is such that said spline elements and troughs impart a bone tissue retaining capability and said prosthesis is capable of being extracted from the bone by tractive movement.

4,623,350

TOTAL HEART PROTHESIS COMPRISING TWO UNCOUPLED PUMPS ASSOCIATED IN A FUNCTIONALLY UNDISSOCIABLE UNIT

Didier Lapeyre, Chaignes, 27120 Pacy sur Eure, and Jean-Louis Chareire, 66, rue Aristide Briand, 92300 Levallois, both of France

Filed Nov. 19, 1984, Ser. No. 673,032

Int. Cl.[4] A61F *2/22*

U.S. Cl. 623—3 **20 Claims**

1. A total cardiac prothesis comprising two pumps, respectively representing the right heart and the left heart, as well as a control device of said pumps (89, 90, 92, 93), actuating said pumps in opposition, said prothesis also comprising an undissociable functional unit formed of:

a pericardial unit (3) destined to be housed in the cavity (2) of the natural heart to be replaced (1) and enclosed in a

tight envelope (8) provided with four coupling orifices (25, 26, 29 and 30), respectively adpated to be connected to the right auricle RA, to the pulmonary artery PA, to the left auricle LA, and to aorta AO, said orifices (25 and 26) for coupling the right auricle to the pulmonary artery PA being provided with valves used respectively as inlet orifice and outlet orifice of a first pump (13, 14) housed in said envelope (8) and destined to assume the right heart function of the natural heart to be replaced;

an extra-pericardial unit (4), destined to be housed in a physiologically neutral space of the receiving sick person and to assume the function of the left heart of the natural heart to be replaced (1), said extra-pericardial unit comprising a second pump (50, 52) enclosed in a tight envelope (40) provided with an inlet orifice (53) and an outlet orifice (56), each provided with a valve;

a functional connection line (5) between said units, comprising:

a first duct (33) passing through said envelope (8) of said pericardial unit (3) and connecting the orifice (29) of the latter corresponding to the left auricle LA with the inlet orifice (53) of the second pump (50,52) incorporated into said extra-pericardial unit (4),

a second duct (34) passing through said envelope (8) of said extra-pericardial unit (3) and connecting the orifice (30) thereof corresponding to aorta AO with the outlet orifice (56) of the second pump (50, 52) incorporated into said extra-pericardial unit (4),

a third duct (32) establishing communication for the gases between the sides of said first and second pumps opposite to the blood flow therethrough.

4,623,351

ENDOPROSTHETIC BONE JOINT DEVICES

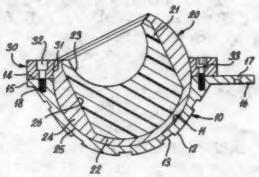
Jonathan C. M. Church, Bourne End, England, assignor to National Research Development Corporation, London, England

Filed Apr. 19, 1984, Ser. No. 601,929

Claims priority, application United Kingdom, Apr. 20, 1983, 8310675

Int. Cl.⁴ A61F 2/32

U.S. Cl. 623—22 **4 Claims**



1. An acetabular component of an endoprosthesis, said component being of overall cup form and comprising:

a first outer part adapted for securement to bone;

a second inner part defining a dished articulation surface and adjustably engaged in said outer part to allow independent variation relative thereto of both the inclination and the rotational position of said surface while exposing such surface; and

a third part engaged with said inner part separately from said surface to maintain the exposure thereof and separately connected with said part to secure said inner part in a preselected fixed position of adjustment.

4,623,352

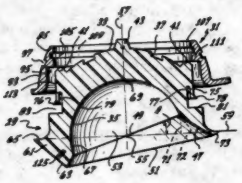
PROTRUSIO CUP

Indong Oh, 851 Lyndon St., South Pasadena, Calif. 91030

Continuation-in-part of Ser. No. 340,024, Jan. 18, 1982, Pat. No. 4,437,193. This application Mar. 7, 1984, Ser. No. 587,287

Int. Cl.⁴ A61F 2/34

U.S. Cl. 623—23 **20 Claims**



1. A protrusio cup which can be implanted as a unit in the acetabulum comprising:

an acetabular cup adapted to be received within the acetabulum;

said acetabular cup having an inner concave bearing surface of generally part-spherical configuration defining a cavity which opens at a mouth, said bearing surface being adapted to receive a femoral head and slidably cooperate therewith;

said acetabular cup having a resilient skirt on the exterior of the acetabular cup and a wall spaced radially inwardly of the skirt to define a gap between the skirt and the wall whereby the skirt can flex radially inwardly;

a protrusio shell having a generally annular segment receiving a generally annular region of the acetabular cup adjacent the mouth of the acetabular cup and flange means adjacent one end of the annular segment projecting generally radially of the annular segment and adapted to engage the bony region around the acetabulum, the other end of the annular segment of the protrusio shell being open with the acetabular cup extending through the opening;

means for mounting the protrusio shell on the acetabular cup prior to implantation whereby the acetabular cup with the protrusio shell mounted thereon can be implanted as a unit in the acetabulum;

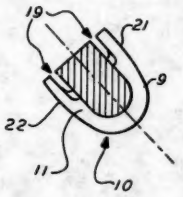
said mounting means including interlocking means on the acetabular cup and the protrusio shell, a portion of the interlocking means being on said skirt; and

said mounting means including a circumferentially extending groove formed in the exterior of the acetabular cup and lying entirely within the annular region of the acetabular cup which receives at least a portion of the annular segment of the protrusio shell.

4,623,353
STEM-TYPE FEMORAL PROSTHESIS INCLUDING A COLLAR PROVIDED WITH ACCESS SLOTS FOR BONE RESECTIONING MEANS

Frederick F. Buechel, 76 Crest Dr., South Orange, N.J. 07079, and Michael J. Pappas, 61 Gould Pl., Caldwell, N.J. 07006

Division of Ser. No. 574,037, Jan. 26, 1984. This application Feb. 18, 1986, Ser. No. 830,207
Int. Cl.[4] A61F *2/32*
U.S. Cl. 623—23 **2 Claims**



1. In stem-type femoral prostheses for implantation in the resected proximal end of a femur and including a collar disposed transversely on the proximal end of the stem for engaging and covering at least a portion of said resected proximal end of said femur, said collar including portions extending outwardly anteriorly and posteriorly of said stem, wherein the improvement comprises:

said collar portions extending outwardly anteriorly and posteriorly of said stem having a pair of access slots having inner and outer walls extending a predetermined distance inwardly thereinto along said stem generally in the lateral to medial direction and extending entirely therethrough in the superior to inferior direction, and upon implantation of said prosthesis in said femur, said stem and femur developing stem-bone fixation interfaces and said slots providing access to bone resection means to be inserted downwardly through said slots to facilitate resectioning of said stem-bone fixation interfaces continuously along said predetermined distance of said slots thereby facilitating removal of said implanted prosthesis from said femur.

4,623,354
MYOELECTRICALLY CONTROLLED ARTIFICIAL HAND

Dudley Childress, Wilmette, and John Strysik, Chicago, both of Ill., assignors to Northwestern University, Evanston, Ill.

Continuation-in-part of Ser. No. 663,154, Oct. 22, 1984. This application May 21, 1985, Ser. No. 736,599
Int. Cl.[4] A61F *1/06*
U.S. Cl. 623—25 **13 Claims**

1. A myoelectrically controlled artificial hand comprising:

a pivot member;

a pair of finger members extending distally from said pivot member and pivotally mounted thereon for selective separation and convergence;

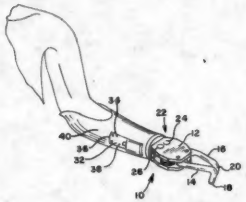
electric motor means for effecting said selective separation and convergence of said finger members,

said electric motor means including a high speed low torque electric motor having a first drive train connected to a first one of said finger members, constructed and arranged to effect rapid separation and convergence of said finger members; and

a second high torque low speed electric motor having a second drive train connected to a second one of said finger members, constructed and arranged to effect high pinch force between said finger members;

battery means for supplying electrical power to said electric motor means;

field effect transistor driver means for actuating said electric motor to operate said myoelectrically controlled artificial hand; and

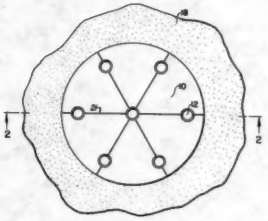


control means for supplying myoelectric pulses to said field effect transistor driver means in response to said myoelectric signals generated by the user, thereby effecting said selective separation and convergence of said finger members.

4,623,355
PROSTHETIC AXON

Stephen D. Sawruk, 11 High St., Nutley, N.J. 07110

Continuation-in-part of Ser. No. 590,561, Mar. 16, 1984, abandoned. This application Aug. 19, 1985, Ser. No. 766,792
Int. Cl.[4] A61F *2/00*
U.S. Cl. 623—66 **17 Claims**



1. A prosthetic axon for electrically bridging damaged nerve fibers, comprising:

(a) a semi-conductive disc having therein a plurality of pores substantially parallel to the polar axis of said disc, said pores having an interior coating of electrically conductive material extending substantially from the top to bottom surfaces of said disc; and

(b) a protein gel within which said semi-conductive disc is embedded, and into which respective sides of said damaged nerve fibers are secured at opposing sides of opposite pore ends of said disc, said gel in electrical contact with said conductive interior material of each of said plurality of pores.

7. The prosthetic axon as recited in claim 1 in which at least one surface of said disc further comprises an impedance network disposed thereon,

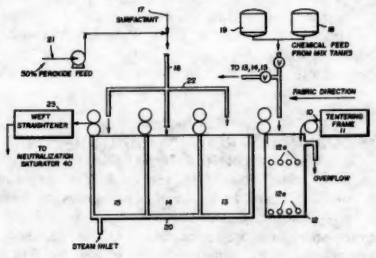
whereby impedance matching between the damaged sides of the nerve fibers is thereby enhanced.

4,623,356

OXIDATIVE AFTERWASH TREATMENT FOR NON-FORMALDEHYDE DURABLE PRESS FINISHING PROCESS

James E. Hendrix, Spartanburg, S.C.; Kimberley J. Lane, Clifton Park, N.Y., and John Y. Daniels, Pineville, N.C., assignors to Spring Industries, Inc., Fort Mill, S.C.

Filed Nov. 6, 1984, Ser. No. 668,857
Int. Cl.[4] D06L *3/06*
U.S. Cl. 8—107 9 Claims



1. In a method of obtaining a durable press textile fabric containing cellulosic fibers, wherein said textile fabric has been treated with a non-formaldehyde finishing agent taken from the group consisting essentially of glyoxal, non-formaldehyde polymers of glyoxal and aldehydes, the improvement characterized in that said textile fabric is subjected to an oxidative afterwash treatment following treatment with said non-formaldehyde finishing agent to prevent yellowing of said fabric upon storage, said afterwash treatment comprising the steps of:

washing said fabric a first time in an oxidative solution containing an oxidate, a stabilizer compound, a base, and a surfactant;

washing said fabric a second time in a neutralizing solution to thereby neutralize said oxidant;

rinsing said textile fabric in an aqueous solution; and

drying said textile fabric.

4,623,357

BLEACH COMPOSITIONS

Warren J. Urban, River Vale, N.J., assignor to Lever Brothers Company, New York, N.Y.

Filed Apr. 2, 1985, Ser. No. 719,085
Int. Cl.[4] C11D *3/39, 7/18*
U.S. Cl. 8—107 17 Claims

1. A bleaching composition comprising:

(i) from about 1 to 40% of a catalyst comprising a water-soluble manganese (II) salt adsorbed onto a water-insoluble solid inorganic silicon support material, the ratio of manganese (II) salt to support material ranging from 1:1000 to 1:10;

(ii) from about 0.1 to 40% of a peroxide compound;

(iii) from about 0.1 to 50% of an alkali metal carbonate; and

(iv) from about 0.1 to 40% of calcium hydroxide; the pH of an aqueous solution containing said composition being 11.0 or higher.

17. A method for bleaching fabric substrates comprising placing the substrate into water and treating with a composition to be added to said water comprising:

(i) from about 1 to 40% of a catalyst comprising a water-soluble manganese (II) salt adsorbed onto a water-insoluble solid inorganic silicon support material, the ratio of manganese (II) salt to support material ranging from 1:1000 to 1:10;

(ii) from about 0.1 to 40% of a peroxide compound;

(iii) from about 0.1 to 50% of an alkali metal carbonate; and

(iv) from about 0.1 to 40% of calcium hydroxide; the pH of an aqueous solution containing said composition being 11.0 or higher.

4,623,358

PROCESS FOR DYEING NATURAL OR SYNTHETIC POLYAMIDE FIBRE MATERIALS WITH 1:1 METAL COMPLEX DYES AND FLUORIDE, FLUOROSILICATE OR FLUOROBORATE

Gerhard Back, Lörrach, Fed. Rep. of Germany, and Walter Mosimann, Therwil, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 23, 1985, Ser. No. 737,112
Claims priority, application Switzerland, May 30, 1984, 2667/84
Int. Cl.[4] C09B *67/24;* D06P *1/67*
U.S. Cl. 8—620 35 Claims

1. A process for dyeing natural or synthetic polyamide fiber material which comprises contacting said material at a pH in the range of 3 to 7 with an aqueous liquor comprising: (a) a 1:1 metal complex dye which contains sulfo groups; and (b) a salt selected from the group consisting of alkali metal fluoride, ammonium fluoride, alkali metal fluorosilicate, ammonium fluorosilicate, alkali metal fluoroborate and ammonium fluoroborate, for a time and at a temperature sufficient to obtain level shades of good fastness.

4,623,359

AQUEOUS SLURRIES OF SOLID CARBONACEOUS FUEL

Farrokh Yaghmaie, Wappingers Falls; Stephen R. Vasconcellos, Fishkill, and Ronald J. McKeon, Beacon, all of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Aug. 20, 1984, Ser. No. 642,313
Int. Cl.[4] C10L *1/32*
U.S. Cl. 44—51 19 Claims

1. A solid carbonaceous fuel-water slurry which comprises:

(1) about 50 to 70 weight % of comminuted solid carbonaceous fuel;

(2) about 0.5 to 8.0 weight % of a water-soluble surfactant derived from a suspension of low rank coal and coal derived creosote oil which is prepared as follows:

(a) mixing comminuted low rank coal feed having a combined oxygen content in the range of about 5.0 to 35.0 weight %, or more and a particle size of less than 1180 microns with coal-derived creosote oil having a specific gravity in the range of about 1.030–1.080 and having an atmospheric boiling point in the range of about 200°–300° C. to produce a suspension having a solids content of about 20 to 60 weight %;

(b) sulfonating the suspension of low rank coal and coal-derived creosote oil from (a) at a temperature in the range of about 100° to 125° C. until at least about 85 weight % of the suspension of low rank coal and coal-derived creosote oil is converted; and

(c) cooling the sulfonated mixture from (b) to room temperature and neutralizing to a pH in the range of about 6.5–7.5 to produce said surfactant; and

(3) water, comprising the remainder of said solid carbonaceous fuel-water slurry.

19. A process for producing a coal-water slurry feedstock to a partial oxidation gas generator comprising:

mixing together about 50–70 weight % of comminuted coal having a particle size so that 100% of the material passes through a 35 mesh sieve and at least 80% passes through a 400 mesh sieve, about 0.5 to 8.0 weight % of a water-soluble surfactant derived from a suspension of comminuted low rank coal and coal derived creosote oil, and water comprising the remainder of said coal-water slurry; wherein said surfactant is prepared by the process of:

(i) mixing comminuted low rank coal having a combined oxygen content in the range of about 5.0 to 35.0 weight %, or more and a particle size of less than 1190 microns

with water to produce an aqueous slurry having a solids content in the range of about 25 to 50 weight %;

(ii) oxidizing the low rank coal in the aqueous slurry from (i) to increase its combined oxygen content by at least 5.0 weight % by gradually stirring into said aqueous slurry from about 10–20 ml of 20–40 volume % hydrogen peroxide for each 100 gr. of low rank coal, and then destroying any excess peroxide;

(iii) separating water from the oxidized low rank coal;

(iv) mixing the oxidized low rank coal from (iii) with coal-derived creosote oil having a specific gravity in the range of about 1.030–1.080 and having an atmospheric boiling point in the range of about 200°–300° C. to produce a suspension having a solids content of about 20 to 60 weight %;

(v) sulfonating the suspension from (iv) at a temperature in the range of about 100° to 125° C. until at least about 85 weight % of the oxidized low rank coal and coal-derived creosote oil are converted; and

(vi) cooling the sulfonated mixture from (v) to room temperature and neutralizing to a pH of about 6.5–7.5 to produce said surfactant.

4,623,360

FUEL COMPOSITIONS

Edward F. Zaweski, and Leonard M. Niebylski, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Oct. 31, 1985, Ser. No. 793,624

Int. Cl.[4] C10L *1/08, 1/26*

U.S. Cl. 44—57 **27 Claims**

1. Distillate fuel for indirect injection compression ignition engines containing, in an amount sufficient to minimize coking, especially throttling nozzle coking in the prechambers or swirl chambers of indirect injection compression ignition engines operated on such fuel, at least the combination of (i) organic nitrate ignition accelerator and (ii) a boronated phenolic compound which, when added to said fuel in combination with said organic nitrate ignition accelerator minimizes said coking.

4,623,361

FUEL COMPOSITIONS

Edward F. Zaweski, and Leonard M. Niebylski, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Oct. 31, 1985, Ser. No. 793,625

Int. Cl.[4] C10L *1/08, 1/26*

U.S. Cl. 44—57 **22 Claims**

1. Distillate fuel for indirect injection compression ignition engines containing, in amounts sufficient to minimize coking, especially throttling nozzle coking, in the prechambers or swirl chambers of indirect injection compression ignition engines operated on such fuel, at least the combination of (i) organic nitrate ignition accelerator and (ii) an organic phosphate which, when added to said fuel in combination with said organic nitrate ignition accelerator minimizes said coking.

4,623,362

FUEL COMPOSITIONS

Edward F. Zaweski, and Leonard M. Niebylski, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Nov. 14, 1985, Ser. No. 797,997

Int. Cl.[4] C10L *1/18*

U.S. Cl. 44—57 **22 Claims**

1. Distillate fuel for indirect injection compression ignition engines containing, in an amount sufficient to minimize coking, especially throttling nozzle coking in the prechambers or swirl chambers of indirect injection compression ignition engines operated on such fuel, at least the combination of (i) organic nitrate ignition accelerator and (ii) an alkoxyalkanol which, when added to said fuel in combination with said organic nitrate ignition accelerator minimizes said coking.

4,623,363

FUEL COMPOSITIONS

Edward F. Zaweski, and Leonard M. Niebylski, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Nov. 27, 1985, Ser. No. 802,699

Int. Cl.[4] C10L *1/24, 1/26, 1/22*

U.S. Cl. 44—57 **16 Claims**

1. Distillate fuel for indirect injection compression ignition engines containing, in an amount sufficient to minimize coking, especially throttling nozzle coking in the prechambers or swirl chambers of indirect injection compression ignition engines operated on such fuel, at least the combination of (i) organic nitrate ignition accelerator and (ii) a P_2S_5-terpene reaction product which, when added to said fuel in combination with said organic nitrate ignition accelerator minimizes said coking.

4,623,364

ABRASIVE MATERIAL AND METHOD FOR PREPARING THE SAME

Thomas E. Cottringer; Ronald H. van de Merwe, and Ralph Bauer, all of Niagara Falls, Canada, assignors to Norton Company, Worcester, Mass.

Continuation-in-part of Ser. No. 592,689, Mar. 23, 1984, abandoned, which is a continuation-in-part of Ser. No. 572,106, Jan. 19, 1984, abandoned. This application Oct. 19, 1984, Ser. No. 662,869

Int. Cl.[4] C09C *1/68*

U.S. Cl. 51—309 **3 Claims**

1. A method of making ceramic bodies containing alpha alumina having a hardness of greater than 16 GPa, a density greater than 90%, and an alpha alumina particle size below one micron comprising providing a dispersion of submicron hydrated alumina particles, said dispersion including an effective amount of submicron alpha alumina crystals, whereby upon drying and firing said hydrated alumina particles are converted to alpha alumina at a temperature below 1100° C., and firing said body to below 1500° C.

4,623,365

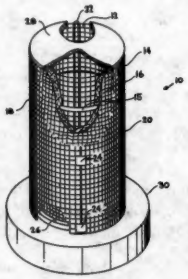
RECIRCULATING ELECTRIC AIR FILTER

Werner Bergman, Pleasanton, Calif., assignor to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Jan. 9, 1985, Ser. No. 690,022

Int. Cl.[4] B03C *3/00*

U.S. Cl. 55—131 **13 Claims**



1. A recirculating electric air filter comprising:

a hollow air permeable inner high voltage electrode connected to a DC high voltage source;

a removable filter material surrounding the inner electrode;

an electrically grounded outer air permeable ground electrode mounted around, spaced apart from and electrically insulated from the inner electrode and containing the filter material therebetween, the outer electrode being formed

of a plurality of segments moveably connected together to allow easy disassembly for removing the filter material;

the inner electrode, filter material, and outer electrode defining an air flow path therethrough between the exterior of the outer electrode and interior of the inner electrode;

an insulated sealing flange at one end of the electrodes for providing a seal between the inner and outer electrode;

an insulated plate at the opposite end of the electrodes for providing a seal across the end of the air filter;

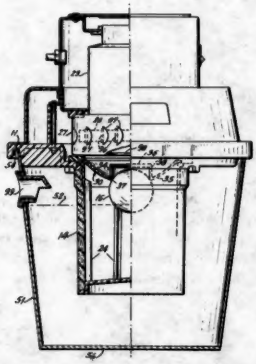
a base having the electrodes mounted thereto and containing a blower means for drawing air out from or blowing air into the inner electrode.

4,623,366

GRID ELEMENT FOR LID OF A CANNISTER TYPE VACUUM CLEANER

Robert C. Berfield, Jersey Shore; Rudolph W. Wacek, Montoursville, and Craig Seasholtz, Avis, all of Pa., assignors to Shop-Vac Corporation, Williamsport, Pa.

Filed Sep. 20, 1985, Ser. No. 778,430
Int. Cl.[4] B01D *46/00*
U.S. Cl. 55—216 **18 Claims**



1. A wet/dry vacuum cleaner including:

an accumulating tank having a closed bottom and an open top, and a removably assembly for closing that open top;

said assembly including suction blower means for generating a stream of working air that extends through said tank, said blower having an inlet opening through which said stream flows, and automatic valve means disposed downstream of said opening to prevent liquid that is picked up by said cleaner and accumulated in said tank from rising to said opening;

said valve means including a float and a member defining an annular seat against which said float seals from below when water in said tank reaches a predetermined level below said opening;

said member including a mounting portion, and a main portion having an aperture where said seat is disposed; and

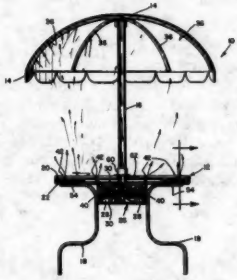
said main portion including a wall that slopes inwardly and downwardly from said mounting portion to said aperture whereby the latter is disposed substantially below said inlet opening of said blower means.

4,623,367

SMOKE-FREE WORK AREA

Ralph E. Paulson, 14802 Grevillea St., Lawndale, Calif. 90260

Filed Jan. 21, 1986, Ser. No. 820,328
Int. Cl.[4] B01D *50/00*
U.S. Cl. 55—385 R **14 Claims**



1. A smoke-free work area comprising:

a table having an upper and lower spaced-apart horizontal surface defining a sealed inner air chamber,

a motor and filter system having a pressure end and a vacuum end and located below said table and in which said pressure end communicates with said air chamber for pressurizing said air chamber,

said upper horizontal surface having a plurality of openings for releasing air from said air chamber at a controlled rate,

a cover located above said table and adapted to substantially encompass the complete table for collecting and trapping air emanating from said upper horizontal surface,

a hollow member having a first end and a second end and adapted to support said cover and in which said first end communicates with said vacuum end of said motor and filter system for creating a vacuum within said hollow member, and

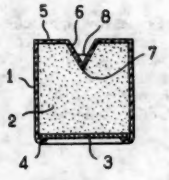
a network of air ducts cooperating with said cover and communicating with said second end of said hollow member whereby a fluid path of air is provided from said air chamber through said openings on the upper horizontal surface through the network of air ducts and through the hollow member to the motor and filter system and back to the air chamber.

4,623,368

ABSORBING AND ESPECIALLY DEHYDRATING CAPSULE

Bernard Lancesseur, Les Courtils, 41200 Pruniers, France

Filed Dec. 20, 1984, Ser. No. 683,815
Int. Cl.[4] B01D *53/04*
U.S. Cl. 55—387 **5 Claims**



1. An absorbing capsule comprising:

a housing element filled with a dehydrating material and made from a plastic material, said element having a first

open end and a second closed end, said closed end having a narrow strip in the shape of a dihedron and including an apex region, said apex region inside said housing element and being in the form of a slit, said slit being sized to prevent said dehydrating material from leaving said housing element;

and a substantially permeable cardboard cover element for covering said open end.

4,623,369

REFINING PROCESS OF REACTIVE GAS FOR FORMING SEMICONDUCTOR LAYER

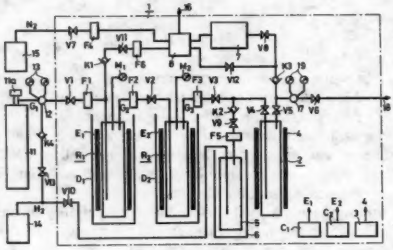
Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Tokyo, Japan

Division of Ser. No. 499,271, May 31, 1983, Pat. No. 4,549,889. This application Jul. 1, 1985, Ser. No. 750,512

Claims priority, application Japan, May 31, 1982, 57-92611

Int. Cl.[4] F25J *3/00*

U.S. Cl. 62—11 **12 Claims**



1. A process for packing a reactive gas for use in the formation of a layer, said reactive gas having an oxygen concentration sufficiently small to preclude formation of oxygen clusters or oxides in the layer, the process by the steps of:

(a) providing at least one storage storage container;

(b) exhausting said storage container by exhaust means using a turbo-pump to purge it;

(c) purifying the impure form of said reactive gas containing oxygen so taht the oxygen concentration is no more than 1×10^{17} cm^{-3}; and

(d) introducing the purified reactive gas into said purged container for storage therein for use in the formation of the layer.

4,623,370

GAS TREATMENT PROCESS

Peter Allen, Johannesburg, and John W. Hemmings, Randburg, both of South Africa, assignors to Aeci Limited, Johannesburg, South Africa

Filed Aug. 29, 1985, Ser. No. 770,786

Claims priority, application South Africa, Sep. 11, 1984, 84/7140

Int. Cl.[4] F25J *3/00*

U.S. Cl. 62—11 **12 Claims**

1. A gas treatment process which includes

passing a composite gas feed stream comprising H_2, N_2, CO and impurities such as Ar and, optionally, CH_4, at super-atmospheric pressure and at sub-ambient temperature into a nitrogen wash zone;

simultaneously introducing liquid nitrogen into the nitrogen wash zone;

withdrawing an H_2-rich stream from the nitrogen wash zone;

withdrawing a liquid tail product stream comprising N_2, CO, the impurities and some H_2 from the nitrogen wash zone;

separating at least a portion of the liquid tail product stream into a plurality of product streams in a plurality of cryogenic distillation zones, each product stream being rich in one or more of H_2, CO, N_2 and at least one impurity;

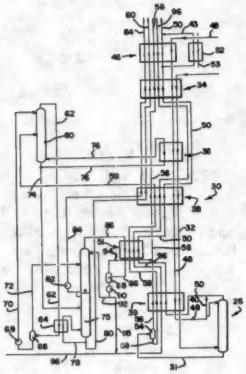
withdrawing from at least two of the distillation zones a gaseous overheads stream;

cooling down the gaseous overheads streams thereby at least partially condensing them;

separating each cooled overheads stream into at least first and second overheads streams;

returning the first overheads streams to their associated distillation zones as reflux streams;

withdrawing from at least two of the distillation zones a liquid bottoms stream;



heating at least part of each of the bottoms stream thereby at least partially vapourizing it; and

returning at least a portion of each vapourized bottoms stream to its associated zone as a reboil stream, the heating up of each of the bottoms streams and the cooling down of each of the overheads streams being effected at least partially by heat exchange with an overheads and/or a bottoms and/or the composite gas feed and/or the liquid tail product stream, and none of the gaseous overheads streams being subjected to further compression prior to separating them into the first and second streams.

4,623,371

UTILIZING THE MEHRA PROCESS FOR PROCESSING AND BTU UPGRADING OF NITROGEN-RICH NATURAL GAS STREAMS

Yuv R. Mehra, Odessa, Tex., assignor to El Paso Hydrocarbons Company, Odessa, Tex.

Continuation-in-part of Ser. No. 637,210, Aug. 3, 1984, Pat. No. 4,578,094, which is a continuation-in-part of Ser. No. 532,005, Sep. 14, 1983, Pat. No. 4,526,594, which is a continuation-in-part of Ser. No. 507,564, Jun. 23, 1983, Pat. No. 4,511,381, which is a continuation-in-part of Ser. No. 374,270, May 3, 1982, Pat. No. 4,421,535. This application Jul. 26, 1985, Ser. No. 759,327

Int. Cl.[4] F25J *3/00*

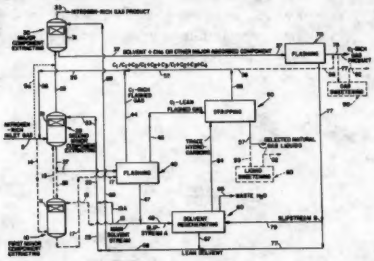
U.S. Cl. 62—17 **36 Claims**

1. A process for separating C_1+ hydrocarbons and nitrogen from a nitrogen-rich natural gas stream which contains more than 3 mol % of said nitrogen, comprising the following steps:

A. extracting said natural gas stream with a physical solvent to produce a nitrogen stream and a methane-rich solvent stream;

B. flashing said solvent stream at a flashing pressure which is selected to be in between 1300 psia and 2 psia and is sufficiently low that substantially all said C_1+ hydrocarbons

are separated from a stripped solvent stream and are produced as a stream of flashed-off gases; and

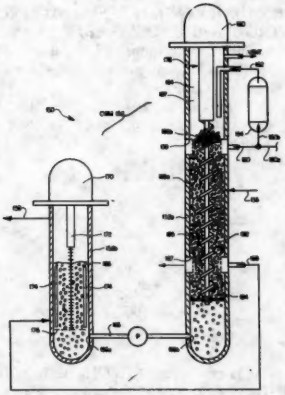


C. recycling said stripped solvent stream to said extracting of said Step A.

4,623,372
CRYSTALLIZATION PROCESS

Robert J. Adler, Shaker Heights; William R. Brown, Brecksville; Lun Auyang, Highland Heights; Yin-Chang Liu, Richmond Heights, and W. Jeffrey Cook, Cleveland Heights, all of Ohio, assignors to CNG Research Company, Cleveland, Ohio

Filed Jul. 11, 1984, Ser. No. 629,615
Int. Cl.[4] B01D *9/00*
U.S. Cl. 62—532 **50 Claims**



1. A triple point crystallization process for separating a crystallizable material from at least one other material which is at least partially excluded from a solid phase obtained upon freezing said materials, comprising promoting the melting of solid phase by the substantial elimination of liquid phase resistance to heat transfer by performing the steps of:

(a) freezing a liquid mixture of said materials to provide a slurry comprising a solid phase distributed within a liquid phase, said solid phase being more dense than said liquid phase and tending to settle downwardly through said liquid phase due to gravity;

(b) relatively moving said solid phase in an upward direction through said liquid phase of said slurry to provide a drained bed of solid phase which is substantially free of liquid;

(c) transferring heat substantially free of liquid phase resistance to said solid phase by contacting the solid phase in said drained bed with a condensing vapor to melt said solid phase and provide a crystallizable material-enriched liquid;

(d) withdrawing at least a portion of said crystallizable material-enriched liquid as a crystallizable material-enriched output;

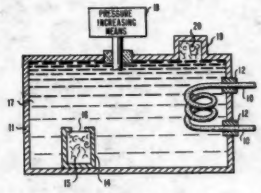
(e) passing the remaining portion of said crystallizable material-enriched liquid in countercurrent flow to said solid phase as a backwash liquid to wash excluded material from the surface of the solid phase and to prevent the upward axial dispersion of excluded material; and

(f) withdrawing said liquid phase separated from said solid phase in step (b) and said backwash liquid together with excluded material washed from said solid phase as an excluded material-enriched output.

4,623,373
TECHNIQUE FOR FABRICATING A GAS-IN-GLASS FIBER

Julian Stone, Rumson, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 15, 1985, Ser. No. 702,387
Int. Cl.[4] C03B *37/01*
U.S. Cl. 65—2 **10 Claims**



1. A method of making and maintaining a gas-in-glass fiber, the method comprising the steps of:

(a) disposing a predetermined length of an optical fiber within a pressure vessel with the ends of the fiber protruding through seals in a least one wall of the pressure vessel;

(b) disposing a container within the pressure vessel, the container containing a predetermined gas to be infused into the fiber which is at a high predetermined pressure, and the container comprising a rupture disc in a wall thereof;

(c) sealing the pressure vessel; and

(d) pressurizing the vessel to a predetermined pressure which is sufficiently high such that (1) the rupture disc in the wall of the gas container implodes and releases the gas into the pressure vessel, and (2) the gas is infused into the fiber and produces a predetermined concentration of the gas molecules therein to form a gas-in-glass fiber Raman laser.

4,623,374
COOLING SYSTEM FOR PARISON PLUNGER

Wilbur O. Doud; Robert E. Davis, and Fred R. Sawyer, all of Muncie, Ind., assignors to Ball Corporation, Muncie, Ind.

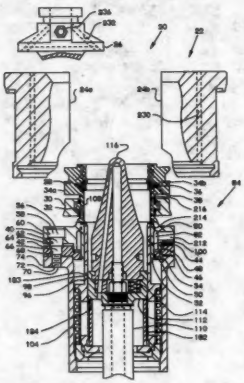
Filed Apr. 2, 1985, Ser. No. 719,381
Int. Cl.[4] C03B *9/38*
U.S. Cl. 65—83 **19 Claims**

1. A parison plunger for the parison molding portion of an individual section glassware molding machine, which parison plunger comprises:

an outer surface having an end surface that is disposed circumferentially around a central axis and that is disposed orthogonally thereto, having a shank surface that is disposed circumferentially around said central axis and that extends longitudinally from said end surface, and having a parison core surface that extends longitudinally from said shank surface, that progressively reduces in circumference and that terminates at a nose;

a central cooling fluid passage being disposed around said central axis, communicating with said end surface, extending longitudinally along said central axis, and terminating inside said parison plunger proximal to said nose; and

a plurality of umbrella passages communicating with said end surface radially outward from said central axis, being spaced circumferentially around said central axis, extending longitudinally from said end surface and inwardly toward said central axis, said umbrella passages converging circumferentially and communicating with said central cooling fluid passage within said nose, said umbrella having a size and/or number such that the total surface area of said umbrella passages is greater than the total surface area of the outer parison contacting surface of said plunger.



18. A method for cooling a parison plunger having a plunger base, a small plunger nose, and a longitudinal surface therebetween with a progressively reducing circumference, comprising:

conveying a fluid through a first conduit within the plunger to adjacent the small plunger nose;

permitting the fluid to expand from said conduit interiorly of the plunger and adjacent the plunger nose; and

thereafter directing the expanded fluid in a generally uniform flow distribution and adjacent the longitudinal surface to the plunger base for exhaustion, said directing step including the step of dividing said fluid into a plurality of umbrella passageways and directing the fluid in a plurality of flows from adjacent the plunger nose to the plunger base.

4,623,375

SYSTEM OF SPEED CONTROL FOR GLASS ARTICLE FORMING MACHINES

Luis Cardenas-Franco, and Jorge A. Heredia de la Paz, both of Monterrey, Mexico, assignors to Vitro Tec Fideicomiso, Monterrey, Mexico

Filed Nov. 21, 1984, Ser. No. 674,056

Claims priority, application Mexico, Nov. 21, 1983, 199481

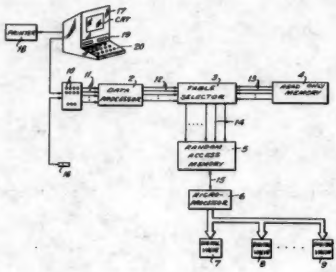
Int. Cl.[4] C03B *9/40*

U.S. Cl. 65—163 **8 Claims**

1. In a glassware article forming machine of the type having forming and handling mechanisms, a valve block including pneumatic valves to actuate said mechanisms, and control means to operate said valves in order to sequentially actuate said mechanisms; a velocity control system for controlling the velocity of operation of the mechanisms of the machine, comprising:

(a) digital valve means coupled between the mechanisms and the output of the pneumatic valves of the valve block, in order to control the amount of fluid flow and thus the velocity of operation of said mechanisms;

(b) a reference table including an aperture sequence for the digital valve means in order to impart to said digital valve means the predetermined velocity profile for a given type of article to be produced; and



(c) a first data processor including said reference table and which is coupled to said digital valve means in order to provide to said digital valve means command signals imparting the velocity profile for the operation of the corresponding mechanisms.

4,623,376

HERBICIDAL PYRIDAZINES AND METHOD FOR CONTROLLING UNDESIRABLE PLANT SPECIES

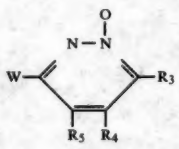
Laurine M. Speltz, Princeton, and Bryant L. Walworth, Pennington, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Apr. 16, 1984, Ser. No. 600,228

Int. Cl.[4] A01N *33/16, 33/26;* C07D *237/08, 237/14*

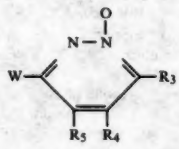
U.S. Cl. 71—92 **20 Claims**

1. A compound having the formula:



wherein R_3 is H or OCH_3; R_4 is CH_3, CH_2OCH_3 or C_2H_5; R_5 is H or CH_3; W is 2-thienyl, 3-thienyl, cyclohexyl, phenyl or phenyl substituted with one or two substituents selected from Cl, F, CH_3, OCH_3, CF_3, $OCHF_2$, OC_6H_5 or OCF_3.

18. A method for the control of undesirable plant species comprising applying to the foliage thereof or to soil containing seeds or other propagating organs of said undesirable plant species, a herbicidally-effective amount of a compound having the formula:



wherein R_3 is H or OCH_3; R_4 is H, CH_3, CH_2OCH_3 or C_2H_5; R_5 is H or CH_3; W is 2-thienyl, 3-thienyl, cyclohexyl, methylcyclohexyl; phenyl or phenyl substituted with one or two

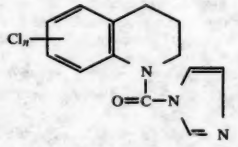
substituents selected from Cl, F, CH_3, CF_3 CN, $OCHF_2$, OC_6H_5, OCH_3, or OCF_3.

4,623,377
1,2,3,4-TETRAHYDROQUINOLIN-1-YLCARBONYLIMIDAZOLES AND HERBICIDAL USE THEREOF

Yoshio Kurahashi, Hachioji; Kozo Shiokawa, Kawasaki; Toshio Goto, Machida; Shinzo Kagabu, Hachioji; Atsumi Kamochi, Hino; Koichi Moriya, Hachioji, and Hidenori Hayakawa, Musashino, all of Japan, assignors to Nihon Tokushu Noyaku Seizo K.K., Tokyo, Japan

Filed Apr. 19, 1985, Ser. No. 725,073
Claims priority, application Japan, Apr. 20, 1984, 59-78719
Int. Cl.[4] C07D *401/06;* A01N *43/38, 43/50*
U.S. Cl. 71—92 **7 Claims**

1. A tetrahydroquinolin-1-ylcarbonylimidazole of the formula



in which n is 0, 1, 2 or 3.

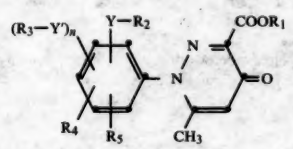
5. A method of combating unwanted vegetation which comprises applying thereto or to a locus from which it is desired to exclude such vegetation a herbicidally effective amount of a tetrahydroquinolin-1-ylcarbonylimidazole according to claim 1.

4,623,378
GAMETOCIDAL PYRIDAZINYLCARBOXYLIC ACID DERIVATIVES

Dieter Dürrr, Bottmingen, and Hans Tobler, Allschwil, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 2, 1984, Ser. No. 637,087
Claims priority, application Switzerland, Aug. 10, 1983, 4364/83
Int. Cl.[4] C07D *237/24;* A01N *43/58*
U.S. Cl. 71—92 **17 Claims**

1. A pyridazinylcarboxylic acid derivative of the formula I



(I)

wherein

R_1 is hydrogen, a agronomically acceptable cation or C_1–C_6alkyl,

Y and Y' are each independently an oxygen or a sulfur atom or a sulfinyl or sulfonyl group,

R_2 and R_3 are each independently a C_1–C_{12}alkyl or C_1–C_{12}alkenyl group, each substituted by one or more halogen atoms,

R_4 and R_5 are each independently hydrogen, halogen, nitro, cyano, C_1–C_6alkoxy, or C_1–C_6alkyl which is unsubstituted or substituted by one or more halogen atoms, and

n is 0 or 1.

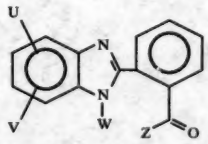
16. A method of obtaining hybrid seeds, which comprises inducing male sterilisation in a seed plant selected as female parent plant at the onset of flowering, but before the formation of the male flower parts, by applying a compound of the formula I as claimed in claim 1, subsequently cross-pollinating said plant with pollen of a selected genetically similar plant, and harvesting the ripe hybrid seeds.

4,623,379
PLANT GROWTH AND DEVELOPMENT MODIFICATION USING 2-(2-OXYCARBONYLPHENYL)BENZIMIDAZOLE DERIVATIVES

Jonathan S. Baum, Pennington, and Tsong M. Chen, Princeton Junction, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Dec. 14, 1984, Ser. No. 681,765
Int. Cl.[4] A01N *43/52;* C07D *235/18*
U.S. Cl. 71—92 **18 Claims**

1. A plant growth and development modifying 2-(2-oxycarbonylphenyl)benzimidazole of the formula



wherein

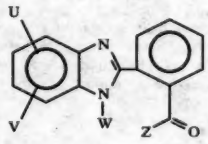
U is selected from -hydrogen, -halogen, -lower alkoxy, -phenyl, and -phenoxy optionally carrying 1 or 2 substituents independently selected from -halogen and -lower haloalkyl;

V is selected from -hydrogen, -halogen, or U and V taken together are —C_4H_4— joining adjacent ring positions, with the provisos that V is not -hydrogen when U is -hydrogen, and when either U or V is -hydrogen the other is not -halogen;

W is selected from -hydrogen and -lower alkyl; and

Z is selected from -hydroxy, -lower alkoxy, and —OM where M is an agriculturally acceptable cation, or W and Z together may constitute a chemical bond.

12. A method of modifying the growth and development of plants which comprises applying to the locus where such modification is desired a plant growth and development modifying effective amount of at least one 2-(2-oxycarbonylphenyl)-benzimidazole of the formula



wherein

U is selected from —hydrogen, -halogen, -lower alkyl, -lower alkoxy, -phenyl, and -phenoxy optionally carrying 1 or 2 substituents independently selected from -halogen and -lower haloalkyl;

V is selected from -hydrogen, -halogen, or U and V taken together are —C_4H_4— joining adjacent ring positions, with the proviso that V is not —hydrogen when U is -hydrogen or -lower alkyl;

W is selected from -hydrogen and -lower alkyl; and

Z is selected from -hydrogen, -lower alkoxy, and —OM where M is an agriculturally acceptable cation, or W and Z together may constitute a chemical bond.

4,623,380

ISOINDOLES, PROCESSES FOR THEIR PREPARATION AND THEIR USE AS HERBICIDAL AGENTS

Roland Schmierer, Todtenweis; Reinhard Handte, Gablingen; Hilmar Mildenberger, Kelkheim; Klaus Bauer, Rodgau; Hermann Bieringer, Eppstein, and Helmut Bürstell, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

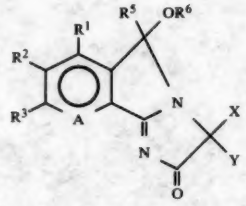
Filed Feb. 1, 1985, Ser. No. 697,506

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1984, 3403730

Int. Cl.[4] A01N *43/48*; C07D *471/14*, *401/14*

U.S. Cl. 71—92 9 Claims

1. A compound of the formula I



in which

A is N;

X is C_1–C_4-alkyl;

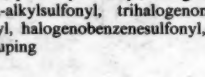
Y is C_1–C_6-alkyl, C_3–C_6-cycloalkyl, C_2–C_4-alkenyl, C_2–C_4-alkynyl, phenyl or benzyl;

R^1, R^2 and R^3 independently of one another are hydrogen, C_1–C_4 alkyl, C_1–C_6-alkoxy, C_1–C_6-alkoxycarbonyl, halogen, nitro, cyano, phenoxy, or C_1–C_2-halogenoalkyl;

R^5 is hydrogen or C_1–C_6-alkyl;

R^6 is hydrogen or C_1–C_{12}-alkyl, which is unsubstituted or mono- or di-substituted by C_1–C_4-alkoxy, C_1–C_4-alkoxyethoxy, C_3–C_6-cycloalkyl, benzyloxy, phenyl, tolyl, halogenophenyl, halogen, cyano, hydroxyl, C_1–C_4-alkoxycarbonyl, oxiranyl, tetrahydrofuryl, C_1–C_4-alkylamino, C_1–C_4-dialkylamino, C_1–C_4-alkylthio, triazolyl, imidazolyl or the grouping

or is C_3–C_6-alkenyl, C_3–C_6-alkadienyl, C_3–C_6-halogenoalkenyl, C_3–C_6-cycloalkyl, C_5- or C_6-cycloalkenyl or C_3–C_6-alkynyl; or is phenyl, which is unsubstituted or substituted by up to two C_1–C_4-alkyl, nitro, C_1–C_4-alkoxycarbonyl, halogen or methoxy groups; or is C_1–C_6-alkoxycarbonyl, phenoxycarbonyl, halogenophenoxycarbonyl, C_1–C_4-alkylsulfonyl, trihalogenomethysulfonyl, benzenesulfonyl, halogenobenzenesulfonyl, toluenesulfonyl or the grouping



R^7 is hydrogen or C_1–C_4-alkyl; and

R^8 is hydrogen, C_1–C_6-alkyl, C_3–C_6-alkenyl, phenyl, halogenophenyl or methylphenyl; or

R^7 and R^8 together with the nitrogen atom, form a pyrrolidine, piperdine, morpholine or N-methyl-piperazine ring which is unsubstituted or substituted by up to two methyl groups; and

R^9 is C_1–C_{12}-alkyl, unsubstituted or mono-, di or tri-substituted by fluorine, chlorine and bromine and may be further monosubstituted by C_1–C_4-alkoxy, C_1–C_4-alkoxycarbonyl, C_1–C_4-alkylthio, phenyl or phenoxy, the phenyl or phenoxy being unsubstituted or mono-, di- or tri-substituted by halogen, C_1–C_4-alkyl, NO_2, CF_3 or C_1–C_4-alkoxy; or is C_2–C_6-alkenyl, C_3–C_6-halogenoalkenyl, C_3–C_6-alkynyl or phenyl, which is unsubstituted or mono- or di-substituted by F, Cl, Br, CF_3, C_1–C_4 alkyl or C_1–C_4-alkoxy, and optical isomers thereof and the acid addition salts and N-oxides.

9. A method of combating undesired plants or for regulating growth, which comprises applying an effective amount of a compound as claimed in claim 1 to the cultivation area to be treated or to the plants to be treated.

4,623,381

PYRIDYL CONTAINING CYCLOHEXANE-1,3-DIONE DERIVATIVES AND HERBICIDAL USE

Dieter Jahn, Edingen-Neckarhausen; Rainer Becker, Bad Durkheim; Norbert Goetz, Worms; Michael Keil, Ludwigshafen, and Bruno Wuerzer, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

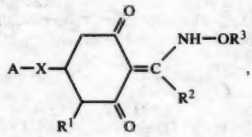
Filed Aug. 10, 1983, Ser. No. 521,661

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1982, 3230087

Int. Cl.[4] A01N *43/40*; C07D *213/63*, *213/50*

U.S. Cl. 71—94 6 Claims

1. A cyclohexane-1,3-dione derivative of the formula



(I)

where A is pyridyl which can be unsubstituted or substituted by alkyl, alkoxy or phenyl, X is an alkylene chain of not more than 5 carbon atoms or an alkenylene chain of not more than 5 carbon atoms, but not vinyl, and note more than 2 double bonds, which may or may not contain a sulfur or oxygen atom or a sulfinyl or sulfonyl group and is unsubstituted or substituted by not more than 2 alkyl groups or chlorine, R^1 is hydrogen, methoxycarbonyl, ethoxycarbonyl, methyl or cyano, R^2 is alkyl of 1 to 4 carbon atoms and R^3 is alkyl of 1 to 3 carbon atoms, alkenyl of 3 to 4 carbon atoms, haloalkenyl of 3 to 4 carbon atoms and 1 to 3 halogen substituents, or propargyl, or a salt thereof.

4. A herbicidal composition consisting essentially of inert additives and a herbicidally effective amount of a cyclohexane-1,3-dione derivative of formula I as claimed in claim 1.

4,623,382

CYCLOHEXANEDIONECARBOXYLIC ACID DERIVATIVES WITH HERBICIDAL AND PLANT GROWTH REGULATING PROPERTIES

Hans-Georg Brunner, Lausen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

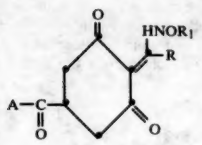
Continuation-in-part of Ser. No. 610,222, May 14, 1984, Pat. No. 4,584,013. This application Oct. 16, 1985, Ser. No. 788,176

Claims priority, application Switzerland, May 18, 1983, 2693/83; Dec. 19, 1983, 6747/83

Int. Cl.[4] C07C *69/74*; A01N *43/40*

U.S. Cl. 71—94 16 Claims

1. A cyclohexanedionecarboxylic acid derivative of the formula I



(I)

wherein

A is an $-NR_3R_4$ radical,

R is C_1–C_6 alkyl unsubstituted or substituted by halogen, C_1–C_6 alkoxy or C_2–C_4 alkylthio,

R_1 is C_1–C_6 alkyl, C_1–C_6 haloalkyl, C_3–C_6-alkenyl, C_3–C_6 haloalkenyl or C_3–C_6-alkynyl,

R_3 and R_4 are each independently hydrogen, C_1–C_6 alkyl, C_1–C_6 haloalkyl, C_2–C_{10} alkoxyalkyl, C_2–C_{10} alkylthioalkyl; C_3–C_6 alkenyl which is unsubstituted or substituted by halogen, C_1–C_4 alkoxy or C_1–C_4 alkylthio; C_3–C_6 alkynyl; phenyl or C_1–C_6 aralkyl, wherein the phenyl nucleus is unsubstituted or substituted by halogen; C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkyl, nitro or cyano, one of R_3 and R_4 is methoxy or

R_3 and R_4, together with the nitrogen atom to which they are attached, form a 5- or 6-membered heterocyclic ring system which may contain an additional oxygen or sulfur atom in the ring

or a metal or ammonium salt thereof.

6. A herbicidal and plant growth regulating composition, which contains as active ingredient an effective amount of a cyclohexanedionecarboxylic acid derivative according to claim 1, together with carriers and/or other formulation assistants.

4,623,383

NOVEL N- AND OPTIONALLY N-SUBSTITUTED (N-DICHLORO-ACETYL)GLYCINE AMIDES WITH AN ANTIDOTE ACTION

Erzsébet Grega née Tóth; József Nagy; Gyula Tarpai; Ernö Lörik; István Tóth; Károly Pásztor; Zsuzsanna Bártfai née Harsányi, all of Miskolc; Ilona Béres, Boldva; László Tasi, Miskolc; Eszter Urszin née Simon, Sajóbábony; Zsolt Dombay; Judit Bajusz née Oláh, both of Miskolc, and Károly Balogh, Miskolc, all of Hungary, assignors to Eszakmagyarorszagi Vegyimuvek, Sajobabony, Hungary

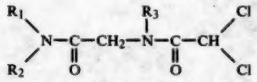
Filed Jul. 23, 1984, Ser. No. 633,382

Claims priority, application Hungary, Jul. 21, 1983, 2565/83

Int. Cl.[4] **C07C** *103/50;* **A01N** *43/46, 47/12, 37/22*

U.S. Cl. 71—100 **11 Claims**

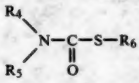
1. An herbicide composition, which comprises an antidote of the Formula (I)



wherein

R_1 and R_2 are the same or different and represent hydrogen, alkyl, alkenyl, or together form a hexamethylene group; and

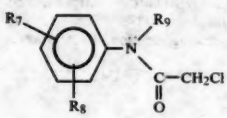
R_3 is alkyl or alkenyl; and an herbicidal compound of the Formula (III)



wherein

R_4 and R_5 are the same or different and represent alkyl, cycloalkyl, or together form a hexamethylene group; and R_6 is alkyl; or

an herbicidal compound of the formula (IV)



wherein

R_7 and R_8 are the same or different and represent an alkyl group; and

R_9 stands for alkyl, alkenyl, alkoxyalkyl, or pyrazolylalkyl; in association with at least one carrier or diluent.

4,623,384

BENZYLACRYLARYL AMIDE HERBICIDAL COMPOUNDS AND METHODS OF USE

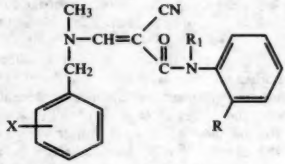
William J. Michaely, Richmond, and Christopher Knudsen, Berkeley, both of Calif., assignors to Stauffer Chemical Co., Westport, Conn.

Continuation-in-part of Ser. No. 740,653, Jun. 3, 1985, abandoned. This application Jan. 24, 1986, Ser. No. 822,344

Int. Cl.[4] **A01N** *37/34;* **C07C** *121/78*

U.S. Cl. 71—105 **27 Claims**

1. A compound having the structural formula

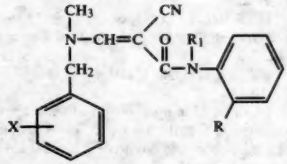


wherein R is selected from the group consisting of fluorine, chlorine, bromine, iodine, methyl, ethyl, ethenyl, methoxy, nitro, trifluoromethyl and cyano;

R_1 is selected from the group consisting of hydrogen, methyl, ethyl and allyl; and

X is selected from the group consisting of a 2- or 3-fluorine, chlorine, methyl, hydrogen and 2-methoxy.

15. The method of controlling undesirable vegetation comprising applying to the area where control is desired, an herbicidally effective amount of a compound having the formula



wherein R is selected from the group consisting of fluorine, chlorine, bromine, iodine, methyl, ethyl, ethenyl, methoxy, nitro, trifluoromethyl and cyano;

R_1 is selected from the group consisting of hydrogen, methyl, ethyl and allyl; and

X is selected from the group consisting of a 2- or 3-fluorine, chlorine, methyl, hydrogen and 2-methoxy.

4,623,385
METHOD OF AND APPARATUS FOR INTRODUCING ADDITIVES INTO A METAL BATH

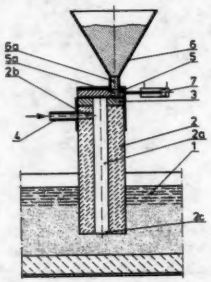
Max Riethmann, Ermatingen, Switzerland, assignor to Georg Fischer Aktiengesellschaft, Schaffhausen, Switzerland

Filed Aug. 1, 1985, Ser. No. 761,607

Claims priority, application Switzerland, Aug. 8, 1984, 03804/84

Int. Cl.⁴ C21C 7/02

U.S. Cl. 75—53 **5 Claims**



1. Apparatus for introducing additives, such as inoculating agents, into a metal bath, comprising a vessel forming the metal bath, a generally vertically arranged immersion pipe having a first end and a second end with the first end submerged in the metal bath in said vessel, said immersion pipe extending upwardly out of the metal bath with the second end of said immersion pipe spaced upwardly from the surface of the metal bath in said vessel, a supply container for the additive located above the metal bath in said vessel, said container having an outlet for discharging additive downwardly therefrom, said outlet being offset laterally from the second end of said immersion pipe, slide means forming a chamber displaceable between alignment with the outlet of said supply container and alignment with the second end of said immersion pipe so that a quantity of the additive can be removed from the supply container into the chamber in the slide means and with the chamber of the slide means moved into alignment with the immersion pipe the introduction of the additive can be effected downwardly through the immersion pipe into the metal bath.

4,623,386
CARBOTHERMAL METHOD OF PRODUCING COBALT-BORON AND/OR NICKEL-BORON

Reinhard Hähn, Schwabach-Limbach; Hans-Joachim Retelsdorf, Zirndorf; Rüdolf Fichte, and Siegfried Sattelberger, both of Nuremberg, all of Fed. Rep. of Germany, assignors to GfE Gesellschaft fur Elektrometallurgie mbH, Dusseldorf, Fed. Rep. of Germany

Filed Dec. 13, 1985, Ser. No. 808,895

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1985, 3501403

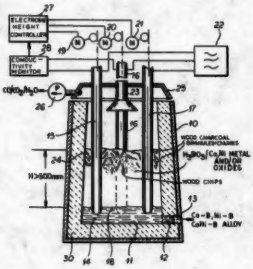
Int. Cl.⁴ C22B 4/00

U.S. Cl. 75—10.18 **10 Claims**

1. A method of producing a boron alloy selected from the group consisting of a cobalt-based, a nickel-based, and a cobalt- and nickel-based boron alloy with less than 0.15% aluminum which comprises the steps of:

(a) maintaining a porous charge consisting essentially of an oxidic boron compound, at least one base-metal component selected from the group consisting of oxidic cobalt containing raw materials, oxidic nickel-containing raw material, pieces of cobalt metal, pieces of nickel metal and mixtures thereof, and a carbon carrier of which at least 20 to 65% by weight is constituted of wood in a particle size range of 2 to 250 mm, above a reduction zone of a low-shaft electrical furnace, said alloy in a molten state collecting on and being removed from a floor of said furnace;

(b) electrically heating said reduction zone by passing an electric current between a plurality of electrodes extending into said reduction zone just above the floor of said furnace to effect a reduction reaction therein, thereby



forming said alloy and producing carbon monoxide to reduce any basic oxidic basic metal raw material at an upper part of said charge; and

maintaining the height of said charge in said furnace during the formation of said alloy sufficient to effect dry carbonization of said wood in said charge to wood charcoal.

4,623,387
AMORPHOUS ALLOYS CONTAINING IRON GROUP ELEMENTS AND ZIRCONIUM AND ARTICLES MADE OF SAID ALLOYS

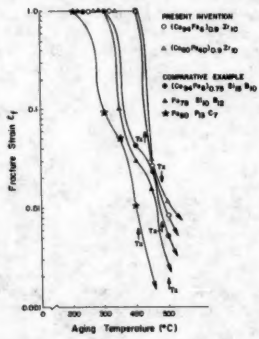
Tsuyoshi Masumoto, Sendai; Kiyoyuki Esashi, Higashiosaka, and Masateru Nose, Itami, all of Japan, assignors to Shin-Gijutsu Kaihatsu Jigyodan, Tokyo, Japan

Continuation of Ser. No. 220,046, Dec. 5, 1980. This application Feb. 5, 1985, Ser. No. 698,449

Claims priority, application Japan, Apr. 11, 1979, 54-43838

Int. Cl.⁴ C22C 33/00

U.S. Cl. 420—41 **12 Claims**



1. Amorphous alloys containing iron group elements and zirconium and having the composition shown in the following formula:

$$X_\alpha Y_\beta Z_\gamma$$

wherein X_α shows that at least one element selected from the group consisting of Fe, Co and Ni is contained in an amount of α atomic %,

Y_β shows that at least one element selected from the group consisting of B, Si, C, Ge, P, As and Sb is contained in an amount of β atomic %, and

Z_γ shows that Zr is contained in an amount of γ atomic %, and wherein α, β, γ are selected to meet the conditions of $\alpha+\beta+\gamma=100$, $0<\beta<1$, $5\leqq\gamma\leqq20$ and $\beta+\gamma\geqq8$.

8. Amorphous alloys containing iron group elements and zirconium and having the composition shown in the following formula:

$$X_{\alpha'}Y_{\beta'}Z_{\gamma'}M_{\delta'}$$

wherein

$X_{\alpha'}$ shows that at least one element selected from the group consisting of Fe, Co and Ni is contained in an amount of α' atomic %,

$Y_{\beta'}$ shows that at least one element selected from the group consisting of B, Si, C, Ge, P, As and Sb is contained in an amount of β' atomic %,

$Z_{\gamma'}$ shows that Zr is contained in an amount of γ' atomic %, and

$M_{\delta'}$ shows that at least one element selected from the group consisting of Cr, Mo, W, Ti, V, Nb, Ta, Mn, Cu, Be, Al, In, Sn, N and lanthanum group elements is contained in an amount of δ' atomic %; and

the sum of α', β', γ' and δ' is 100 and each value of α', β', γ' and δ' is shown in the following paragraphs (A), (B), (C), (D), (E), (F):

(A) when M is t least one element selected from the group consisting of Cr, Mo and W,

$$40\leqq\alpha'\leqq92,\ 0<\beta'<1,\ 5<\gamma'\leqq20,\ 0<\delta'\leqq40$$
$$\beta'+\delta'\leqq40 \text{ and } 8\leqq\beta'+\gamma'+\delta'$$

(B) when M is at least one element selected from the group consisting of Ti, V, Nb, Ta, Cu and Mn,

$$45\leqq\alpha'\leqq92,\ 0<\beta'<1,\ 5\leqq\gamma'\leqq20,\ 0<\delta'\leqq35,$$
$$\beta'+\delta'\leqq35 \text{ and } 8\leqq\beta'+\gamma'+\delta',$$

(C) when M is at least one element selected from the group consisting of Be and Al,

$$67\leqq\alpha'\leqq92,\ 0<\beta'<1,\ 5\leqq\gamma'\leqq20,\ 0<\delta'<13,$$
$$\beta'+\delta!<13 \text{ and } 8\leqq\beta'+\gamma'+\delta'$$

(D) when M is at least one element selected from the group consisting of N, In and Sn,

$$70\leqq\alpha'\leqq92,\ 0<\beta'<1,\ 5\leqq\gamma'\leqq20,\ 0<\delta'\leqq10,$$
$$\beta'+\delta'\leqq10 \text{ and } 8\leqq\beta'+\gamma'+\delta',$$

(E) when M is at least one element selected from lanthanum group elements,

$$70\leqq\alpha'\leqq92,\ 0<\beta'<1,\ 8\leqq\gamma'\leqq20,\ 0<\delta'<10 \text{ and}$$
$$8\leqq\beta'+\gamma'+\delta',$$

(F) when elements of at least two groups selected from the above-described groups (A), (B), (C), (D) and (E) are combined, δ' is within the range of δ' value in each of the groups (A), (B), (C), (D) and (E), and the total value of β' and δ' is not more than 40, α' is 40 to 92, γ' is 5 to 20 and the sum of β', γ' and δ' is not less than 8, provided that when at least one element is selected from each of the groups (C) and (D), the sum of these elements and $Y_{\beta'}$ elements is less than 13 atomic %.

4,623,388

PROCESS FOR PRODUCING COMPOSITE MATERIAL

Arun D. Jatkar, Monroe; Alfred J. Varall, Jr., Middletown, and Robert D. Schelleng, Suffern, all of N.Y., assignors to Inco Alloys International, Inc., Huntington, W. Va.

Division of Ser. No. 507,837, Jun. 24, 1983, Pat. No. 4,557,893.
This application Oct. 8, 1985, Ser. No. 785,521
Int. Cl.[4] C22C *29/12*
U.S. Cl. 75—232 3 Claims

1. A composite material adapted to form a compacted composite of relatively low density and high modulus comprising a powdery mass wherein particles of reinforcing phase are enveloped in and bonded to mechanically worked powders of a ductile metal matrix selected from the group of aluminum and aluminum-base alloys said particles of reinforcing phase comprising about 0.2 to about 30 volume percent of said powder.

4,623,389

ELECTROCONDUCTIVE SILVER COMPOSITION

Harold E. Donley, Oakmont, and Cheryl E. Belli, New Kensington, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 22, 1985, Ser. No. 725,597
Int. Cl.[4] H01B *1/02*
U.S. Cl. 106—1.14 13 Claims

1. In an electroconductive composition for coating at least a portion of a glass substrate including silver powder, a glass frit, and a carrying medium, the improvement comprising:

silver ion reducing agent containing a trivalent chromium compound and a divalent tin compound.

4,623,390

INSULATING PAINT FOR INTERIOR AND EXTERIOR OF BUILDINGS AND METHOD OF MAKING SAME

John A. Delmonico, Arvada, Colo., assignor to Old Western Paints, Inc., Denver, Colo.

Continuation of Ser. No. 626,681, Jul. 2, 1984, abandoned. This application Nov. 4, 1985, Ser. No. 794,587
Int. Cl.[4] C09D *5/14*
U.S. Cl. 106—15.05 11 Claims

1. An insulating paint of the type including water, surfactants, coalescing agents, defoamers, pigments and fillers for application to interior and exterior building walls to enhance heat insulation characteristics thereof, comprising the admixture of a paint composition and microspheres having a density of about 0.22 to about 0.28 gm/cc and a diameter of about 100 microns, said microspheres being in the weight amount of about 0.75 pound per gallon of insulating paint.

4,623,391

COLOR DEVELOPERS FOR PRESSURE-SENSITIVE OR HEAT-SENSITIVE RECORDING PAPERS

Michael E. A. Seitz, Dayton, Ohio, assignor to The Standard Register Company, Dayton, Ohio

Division of Ser. No. 544,422, Oct. 2, 1983, Pat. No. 4,531,139.
This application Apr. 10, 1985, Ser. No. 721,879
Int. Cl.[4] C09D *11/00*
U.S. Cl. 106—21 5 Claims

1. In a color developer composition for coating onto sheet material to make pressure-sensitive or heat-sensitive recording material, containing a color developer compound, a solvent, and other additives to permit coating, the improvement wherein said color developer compound is a compound including a sulfonylamide (—SO_2NH—) group and also including an electron-withdrawing atom or moiety within five atoms of the nitrogen atom of said sulfonylamide group, said compound being free of any basic group, with any additional NH groups being no more than one carbon atom away from an SO_2, C=O, C=N or NO_2 group, with the proviso that the electron withdrawing group is not a carboxyphenyl group connected through the nitrogen atom of the sulfonylamide group, with the further proviso that the sole electron-withdrawing group is

not a carboxyphenyl group and with the further proviso that said compound does not include a —CHOH— group directly connected to a nitrogen atom.

4,623,392

PRINTING INK

David T. Ou-Yang, Cottage Grove, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 25, 1982, Ser. No. 436,379
Int. Cl.[4] C09D *11/02*
U.S. Cl. 106—27 **8 Claims**

1. A composition of matter useful for coating substrates comprising

(a) a vehicle which comprises at least two resins which are compatible, one of said resins being selected from the group consisting of polyvinyl acetals and dibasic acid-modified rosin esters,

(b) a release agent selected from the group consisting of fatty acids and fatty amides, and

(c) a solvent for the vehicle and release agent, said solvent being suitable for flexographic printing processes.

4,623,393

REFRACTORY GUN MIX

Masumi Toda, Oku County; Masashi Mori, Okayama; Shingo Nonaka, Akaiwa County; Hiroshi Kyoden, Okayama; Kenji Ichikawa, Bizen, and Yoshihisa Hamazaki, Okayama, all of Japan, assignors to Shinagawa Refractories Co., Ltd., Tokyo, Japan

Filed Oct. 16, 1984, Ser. No. 661,333
Claims priority, application Japan, Oct. 17, 1983, 58-192572
Int. Cl.[4] B28B *7/36*
U.S. Cl. 106—38.22 **12 Claims**

1. A refractory gun mix prepared by:

(A) Adding a hardening accelerator to a coarse refractory portion having a particle diameter size of at least 74 microns and mixing the hardening accelerator with the refractory portion;

(B) Separately adding a deflocculant to a fine powder portion having a particle diameter size of at most 74 microns to form a fine powder mixture, and then adding a binder and water to said fine powder-deflocculant mixture and mixing it to form a slurry; and

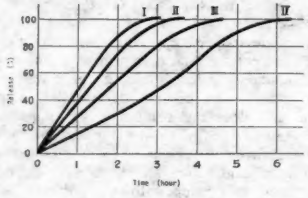
(C) mixing said coarse refractory portion (A) and said slurry (B) at the nozzle portion of a gun for gunning.

4,623,394

GRADUALLY DISINTEGRABLE MOLDED ARTICLE

Satoshi Nakamura; Hiromi Hijiya, and Toshio Miyake, all of Okayama, Japan, assignors to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, Japan

Filed Apr. 3, 1985, Ser. No. 719,434
Claims priority, application Japan, Apr. 14, 1984, 59-75576
Int. Cl.[4] C08L *5/00*
U.S. Cl. 106—122 **7 Claims**



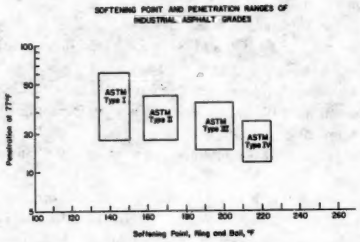
1. In a molded article, the composition of which comprises pullulan, the improvement whereby the gradual disintegration properties of the article are improved, wherein the composition of the article consists essentially of a combination of pullulan and at least one heteromannan, the amount of heteromannan being, based on the dry solids, 1 to 100% of the pullulan.

4,623,395

METHOD FOR PRODUCING INDUSTRIAL ASPHALTS WITHOUT AIR-BLOWING USING MALEIC ANHYDRIDE

Judson E. Goodrich, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Oct. 31, 1984, Ser. No. 672,429
Int. Cl.[4] C08L *95/00*
U.S. Cl. 106—273 R **11 Claims**



1. A one-step method of producing an industrial asphalt from a petroleum residua which consisting essentially of mixing together without air-blowing:

(a) a feed material consisting essentially of a bituminous material having a viscosity of at least 50 centistokes at 350 degrees Fahrenheit and wherein the feed material forms a single phase when mixed with 5 weight percent maleic anhydride; and

(b) from about 0.1 to 20.0 percent by weight of maleic anhydride, said mixing being done at a temperature in the range of 351 to 600 degrees Fahrenheit, whereby the softening point of the feed is substantially increased and the penetration is significantly decreased.

8. A one-step method of producing an industrial asphalt from a petroleum residuum which consisting essentially of mixing together without air-blowing:

(a) a feed consisting essentially of a petroleum residuum having a viscosity of 65 to 180 centistokes at 350 degrees Fahrenheit and wherein said feed forms a single phase when mixed with 5 weight percent of maleic anhydride; and

(b) from more than 0.5 to less than 10 percent by weight of maleic anhydride, said mixing being done at a temperature in the range of 400 to 500 degrees Fahrenheit for from 5 to 25 minutes; whereby the softening point of the petroleum residuum is substantially increased by 30 to 70 degrees Fahrenheit and the penetration is significantly decreased by at least 10 to 60 dmm at 77 degrees Fahrenheit thereby producing an industrial asphalt having a softening point in the range 200 to 235 degrees Fahrenheit and a penetration of 12 to 30 dmm at 77 degrees Fahrenheit.

4,623,396

TITANIUM-MICA COMPOSITE MATERIAL

Asa Kimura, Tokyo, and Fukuji Suzuki, Atsugi, both of Japan, assignors to Shiseido Company Ltd., Tokyo, Japan

Filed Sep. 7, 1984, Ser. No. 648,849
Claims priority, application Japan, Sep. 14, 1983, 58-170345; Feb. 15, 1984, 59-26716; Feb. 15, 1984, 59-26717
Int. Cl.[4] C09C *3/06*
U.S. Cl. 106—291 **13 Claims**

1. A titanium-mica composite material produced by first coating mica with titanium dioxide, heating the coated mica in

the presence of a reducing gas to at least partially convert the titanium dioxide first coat to the low oxides of titanium or to a

titanium oxynitride, and applying thereto a second coating of titanium dioxide.

4,623,397

SURFACE COATINGS PIGMENTED WITH A 1-(DICHLORO-4'-SULFAMOYL OR SUBSTITUTED SULFAMOYL-PHENYLAZO-2-HYDROXY-3-PHENYL-CARBAMOYL OR SUBSTITUTED PHENYLCARBAMOYL-NAPHTHALENE

Bansi L. Kaul, Biel-Benken, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

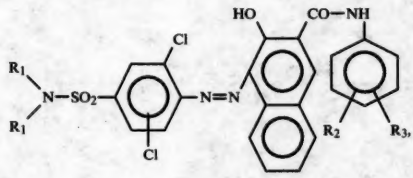
Division of Ser. No. 410,175, Aug. 20, 1982, abandoned. This application Oct. 10, 1984, Ser. No. 659,246

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1981, 3134126

Int. Cl.[4] C08K *5/23;* **C09B** *29/01, 29/20;* **D06P** *1/18*

U.S. Cl. 106—308 Q **5 Claims**

1. A surface coating pigmented with a compound of the formula



wherein

each R_1 is independently hydrogen, C_{1-8}alkyl, cyclohexyl or C_{2-3}alkyl substituted by 1 or 2 substituents selected from halo, hydroxy, cyano, methoxy, ethoxy and (C_{1-2}alkoxy)-carbonyl, and

each of R_2 and R_3 is independently hydrogen, chloro, bromo, methyl, methoxy or ethoxy.

4,623,398

ORGANO-CLAYS

Howard Goodman, and Andrew R. Fugler, both of St. Austell, England, assignors to English Clays Lovering Pochin & Company, Ltd., Cornwall, England

Filed Apr. 25, 1985, Ser. No. 727,022

Claims priority, application United Kingdom, Apr. 27, 1984, 8410881; Nov. 2, 1984, 8427821

Int. Cl.[4] C04B *14/00, 33/00*

U.S. Cl. 106—308 N **8 Claims**

1. A process for preparing an organo-clay which is readily dispersible in an organic medium, which process comprises

(a) mixing an aqueous suspension of a smectite clay with a quaternary ammounium compound capable of rendering the smectite clay organophilic;

(b) subjecting the mixture formed in step (a) to high shear mixing for a time sufficient to dissipate in the mixture at least 100 KJ of energy per kg. of dry solids in the mixture; and

(c) dewatering the product of step (b).

4,623,399

SOLVENT FOR REMOVING IRON OXIDE DEPOSITS

Wayne W. Frenier, Tulsa, Okla., assignor to Dowell Schlumberger Incorporated, Tulsa, Okla.

Filed Feb. 4, 1985, Ser. No. 697,615

Int. Cl.[4] C23G *1/02*

U.S. Cl. 134—3 **25 Claims**

1. An improved aqueous acid composition to dissolve iron oxide deposits, comprising:

(a) N-hydroxyethyl ethylenediamine triacetic acid, and

(b) an organic acid selected from the group consisting of water soluble aliphatic monocarboxylic, aliphatic polycarboxylic, and aliphatic hydroxylated mono- or polycarboxylic acid, in an amount effective to increase the rate of dissolution of iron oxide deposits beyond the rate of dissolution thereof by the composition absent said organic acid, said aqueous acid composition having a pH less than about 3.

4,623,400

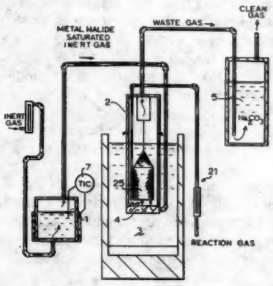
HARD SURFACE COATINGS FOR METALS IN FLUIDIZED BEDS

Joseph E. Japka, Cherry Hill; Robert Staffin, Colonia, and Swarnjeet S. Bhatia, Scotch Plains, all of N.J., assignors to Procedyne Corp., New Brunswick, N.J.

Filed Feb. 22, 1985, Ser. No. 704,171

Int. Cl.[4] C23C *8/06, 16/00*

U.S. Cl. 148—6.35 **26 Claims**



1. A process of surface coating a metal workpiece in a short period of time under substantially atmospheric pressure comprising:

a. fluidizing a bed of inert particulate matter;

b. submerging the workpiece in the fluidizied bed;

c. heating the submerged workpiece in the fluidized bed to a predetermined temperature;

d. fluidizing the bed with an inert gas in which a metal halide has been mixed;

e. feeding a gas capable of forming a nitride, a sulfide, a carbide or an oxide with the metal of the metal halide and depositing the nitride, sulfide, carbide or oxide on the surface of the workpiece;

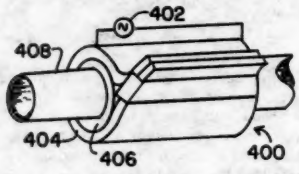
f. maintaining the bed at the elevated temperature and slightly greater than atmospheric pressure for a period sufficient to coat the workpiece and provide a metallurgical bond between the coating and the workpiece;

g. cooling the coated workpiece.

4,623,401
HEAT TREATMENT WITH AN AUTOREGULATING HEATER

Rodney L. Derbyshire, Menlo Park, and Paul F. Busch, Los Altos Hills, both of Calif., assignors to Metcal, Inc., Menlo Park, Calif.

Continuation of Ser. No. 586,719, Mar. 6, 1984, abandoned. This application Feb. 10, 1986, Ser. No. 827,680
Int. Cl.[4] C21D *9/14*
U.S. Cl. 148—13 **14 Claims**



1. A process for altering the metallurgical properties of a metal article, the process comprising the steps of:
uniting the article with an autoregulating heater which is operable in the field, to provide autoregulated heat to at least a portion of the article;
forming the autoregulating heater to include a first magnetic material having an autoregulating (AR) temperature substantially corresponding to at least a heat treating temperature of the article;
selecting the first magnetic material having an effective magnetic permeability which is at least 100 at temperatures below the AR-temperature;
selecting a second magnetic material having an AR temperature higher than the AR temperature of the first magnetic material;
defining the first magnetic material as a first layer;
defining the second magnetic material as a second layer;
positioning the first layer and the second layer against each other in electrical contact;
whereby current flows mainly through a shallow depth of the first layer when the magnetic permeability thereof greatly exceeds 1;
wherein substantial current flows in the second layer when the magnetic permeability of the first layer is substantially one; and
driving the temperature of the heater and the article united therewith to at least approximately the Curie temperature of the first magnetic material, which includes the step of:
applying an a.c. current of substantially constant amplitude and frequency to the first magnetic material.

4,623,402
METAL COMPOSITION AND PROCESS FOR PRODUCING SAME

Jury M. Maximov; Mansur K. Ziatdinov; Anatoly D. Kolmakov; Larisa G. Raskolenko, all of Tomsk; Alexandr G. Merzhanov; Inna P. Borovinskaya, both of Moskovskaya, and Fedor I. Dubovitsky, Moscow, all of U.S.S.R., assignors to Nauchno-Issledovatelsky Institut Prikladnoi Matematiki Pri Tomskom Gosudarstvennov Universitete, Tomsk and Institut Khimicheskoi Fiziki Akademii Nauk SSSR, Moskovskaya, both of, Japan

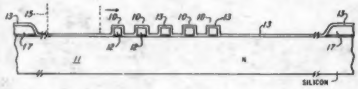
PCT No. PCT/SU80/00217, § 371 Date Sep. 21, 1981, § 102(e) Date Sep. 21, 1981, PCT Pub. No. WO81/02168, PCT Pub. Date Aug. 6, 1981
Continuation of Ser. No. 305,633, Sep. 21, 1981, abandoned. This PCT application Dec. 25, 1980, Ser. No. 563,552
Claims priority, application U.S.S.R., Jan. 25, 1980, 2865652
Int. Cl.[4] C21D *1/56*
U.S. Cl. 148—20.3 **10 Claims**

1. A process for producing a metal composition from a starting material consisting essentially of at least one alloy, each said alloy consisting essentially of from 30 to 70% by weight of one or two metals selected from the group consisting of iron, nickel and cobalt, and one, two or three metals selected from the group consisting of aluminum, titanium, zirconium, niobium, tantalum, chromium, molybdenum, tungsten, manganese and vanadium, said process comprising:
a. pulverizing said starting material to a powder having a particle size of 0.01 to 2.0 mm;
b. placing said powder in an atmosphere containing an excess of nitrogen, said atmosphere being maintained at a pressure of from 1 to 1000 bar;
c. locally igniting the powder by means of an electric coil, electric spark or electric arc to produce combustion, wherein combustion is ignited at any point of the powder mass to produce a combustion zone, which combustion zone moves along the powder mass and has a temperature sufficient to melt said one or two metals selected from said first group as the metals of said first group are evolved during the formation of nitrides of said one, two, or three metals of said second group and ranges from 1420°–1820° C., and wherein an excess of nitrogen is maintained until completion of the combustion to thereby produce said metal composition.

4,623,403
INDEXING OF LASER BEAM FOR PROGRAMMING VLSI DEVICES

Kendall S. Wills, and Paul A. Rodriguez, both of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 15, 1984, Ser. No. 621,280
Int. Cl.[4] G01B *9/02, 11/02*
U.S. Cl. 148—33.3 **7 Claims**



1. A target for indexing a laser beam in the manufacture of semiconductor devices, comprising:
a plurality of strips positioned perpendicular to the path that the laser beam travels along a face of a semiconductor body, the width of each strip being in the range of $\frac{1}{8}$ to $\frac{1}{4}$ the diameter of the beam and the width of each strip and the spacing between strips being less than the size of the laser beam.

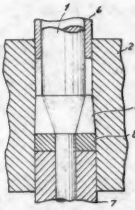
4,623,404
METHOD FOR MAKING PERMANENT MAGNETS OF Mn-Al-C ALLOYS

Akihiko Ibata, Izumisano, and Yoichi Sakamoto, Suita, both of Japan, assignors to Matsushita Electric Industrial Company, Limited, Japan

Filed Apr. 18, 1983, Ser. No. 486,244
Claims priority, application Japan, Apr. 19, 1982, 57-65909
Int. Cl.[4] H01F *1/02*
U.S. Cl. 148—101 **14 Claims**

1. A method for making an Mn—Al—C alloy magnet suit-

able for multipolar magnetization which comprises: (1) providing a starting hollow billet made of a polycrystalline Mn—Al—C alloy magnet which has been rendered anisotropic; (2) subjecting a first part of the entire hollow billet to compressive working at a temperature from 530° to 830° C. while keeping restrained a second part of the hollow billet along its length so that the second part is prevented from suffering compressive deformation until it is fed into a compressive working region in which the billet is plastically deformed, the compressive working region having a larger cross-sectional area than the second part cross-sectional area included between the inner and outer surfaces of the second part, the first part in the compressive working region being gradually compressed; and (3) further



compressing the hollow billet until the entire hollow billet is plastically deformed in the compressive working region.

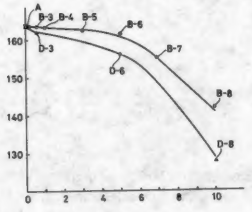
7. A method for making an Mn—Al—C alloy magnet suitable for multipolar magnetization which comprises: (1) providing a hollow cylinder billet made of a polycrystalline Mn—Al—C alloy magnet which has been rendered anisotropic; (2) subjecting the hollow billet to compressive working at a temperature from 530° to 830° C. such that the billet is gradually deformed in a compressive working region so as to increase the cross-sectional area of the billet included between the inner and outer surfaces of the billet while keeping restrained the billet from its inner and outer surfaces during the course of the compressive working; and (3) continuing the compressive working until the entire billet is plastically deformed.

4,623,405

METALLIC MAGNETIC POWDER

Kiminori Tamai, Saku, Japan, assignor to TDK Corporation, Tokyo, Japan

Filed Aug. 14, 1985, Ser. No. 765,618
Claims priority, application Japan, Aug. 15, 1984, 59-169390
Int. Cl.⁴ H01F 1/02
U.S. Cl. 148—105 **7 Claims**



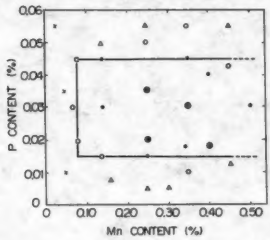
1. A metallic magnetic powder treated with an alkyl group-containing dicarboxylic acid so that the acid is deposited on the particle surfaces.

4,623,406

METHOD FOR PRODUCING A GRAIN-ORIENTED ELECTRICAL STEEL SHEET HAVING A HIGH MAGNETIC FLUX DENSITY

Yozo Suga, Kitakyushu; Fumio Matsumoto, Kawasaki, and Tadashi Nakayama, Kitakyushu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Sep. 21, 1983, Ser. No. 534,290
Claims priority, application Japan, Sep. 24, 1982, 57-165065
Int. Cl.⁴ H01F 1/04
U.S. Cl. 148—111 **4 Claims**



1. A method for producing a grain-oriented electrical steel sheet having high magnetic flux density in terms of B_{10} of 1.89 Tesla or more comprising the steps of:

heating, to a temperature of from more than 1280° C. to 1430° C., a slab which essentially consists of from 0.025% to 0.075% of C, from 3.0% to 4.5% of Si, from 0.01% to 0.060% of acid soluble aluminum, from 0.0030% to 0.0130% of N, not more than 0.007% of S, from 0.08% to 0.45% of Mn, and from 0.015% to 0.045% of P, the balance being Fe;

subsequently hot rolling said slab to form a hot-rolled strip;

annealing said hot-rolled strip in a temperature in the range of from 850° C. to 1200° C. for a short period of time;

subsequently heavily cold-rolling the annealed strip at a reduction of not less than 80%, thereby obtaining the final sheet thickness;

continuously decarburization-annealing the obtained cold-rolled strip in a wet hydrogen atmosphere and then applying an annealing separator on the strip; and

subsequently carrying out a final high temperature annealing.

4. A grain-oriented electrical steel sheet having high magnetic flux density in terms of B_{10} of 1.89 Tesla or more, formed from a slab essentially consisting of from 0.25% to 0.075% C, from 3.0 to 4.5% of Si, from 0.010% to 0.060% of acid soluble aluminum, from 0.0030% to 0.0130% of N, not more than 0.007% of S, from 0.08% to 0.45% of Mn, and from 0.015% to 0.045% of P, the balance being essentially Fe, wherein said sheet is produced by heating said slab to a temperature of from more than 1280° C. to 1430° C. and by suppressing, prior to final high temperature annealing, secondary recrystallization by means of an inhibitor determined by the composition of said slab.

4,623,407

METHOD FOR PRODUCING A GRAIN-ORIENTED ELECTRICAL STEEL SHEET HAVING A HIGH MAGNETIC FLUX DENSITY

Yozo Suga; Toyohiko Konno, and Tadashi Nakayama, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Sep. 21, 1983, Ser. No. 534,293
Claims priority, application Japan, Sep. 24, 1982, 57-165066
Int. Cl.⁴ H01F 1/04
U.S. Cl. 148—111 **4 Claims**

1. A method for producing a grain-oriented electrical steel

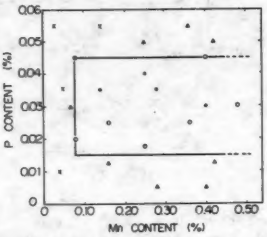
sheet having high magnetic flux density in terms of B 10 of 1.89 Tesla or more, comprising the steps of:

heating to a temperature not exceeding 1280° C., a slab which essentially consists of from 0.025% to 0.075% of C, from 3.0% to 4.5% of Si, from 0.010% to 0.060% of acid soluble amuminum, from 0.0030% to 0.0130% of N, not more than 0.007% of S, from 0.08% to 0.45% of Mn, and from 0.015% to 0.045% of P, the balance being Fe;

subsequently hot rolling said slab to form a hot-rolled strip;

annealing said hot-rolled strip in a temperature in the range of from 850° C. to 1200° C. for a short period of time;

subsequently heavily cold-rolling the annealed strip at a reduction of not less than 80%, thereby obtaining the final sheet thickness;



continuously decarburization-annealing the obtained cold-rolled strip in a wet hydrogen atmosphere and then applying an annealing separator on the strip; and

subsequently carrying out a final high temperature annealing.

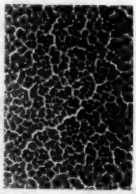
4. A grain-oriented electrical steel sheet having a high magnetic flux density in terms of B10 of 1.89 Telsa or more, formed from a slab essentially consisting of from 0.025% to 0.075% of C, from 3.0 to 4.5% of Si, from 0.010% to 0.060% of acid soluble aluminum, from 0.0030% to 0.0130% N, not more than 0.007% of S, from 0.08% to 0.45% of Mn, and from 0.015% to 0.045% of P, the balance being essentially Fe, wherein said sheet is produced by heating said slab to a temperature of from not exceeding 1280° C. and by suppressing, prior to a final high temperature annealing, a secondary recrystallization by means of an inhibitor determined by the composition of said slab.

4,623,408

NITROGEN-CONTAINING AMORPHOUS ALLOY

Hideaki Karamon, Sendai, and Keiichi Ogawa, Tokyo, both of Japan, assignors to Hideaki Karamon, Sendai and Research Development Corporation of Japan, Tokyo, both of, Japan

Filed Jan. 16, 1985, Ser. No. 691,827
Claims priority, application Japan, Jan. 20, 1984, 59-7319
Int. Cl.[4] C22C *1/10*
U.S. Cl. 148—403 **11 Claims**



1. A nitrogen-containing amorphous alloy having the formula

$$M_xL_yN_z$$

wherein

M is at least one metal or metal alloy,

L is B, Al, Ga, In, C, Si or Ge,

each of x, y and z is a number larger than zero, $x+y+z=100$ and $y+z$ is 10 or larger,

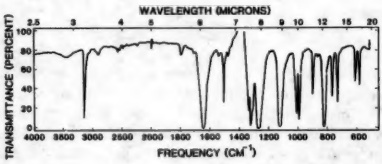
said amorphous alloy having been prepared without using nitrogen gas, said amorphous alloy consisting essentially of first regions of an M-based amorphous phase having a low specific resistivity surrounded by second regions of LN amorphous phase having a high specific electrical resistivity.

4,623,409

PREPARATION OF 1,1'-DINITRO-3,3'-AZO-1,2,4-TRIAZOLE

Kien-Yin Lee, Los Alamos, N. Mex., assignor to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Mar. 5, 1985, Ser. No. 708,624
Int. Cl.[4] C06B *25/34*
U.S. Cl. 149—92 **11 Claims**



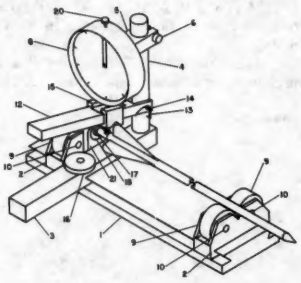
9. A composition of matter which comprises 1,1'-dinitro-3,3'-azo-1,2,4-triazole.

4,623,410

ARROW MASTER-STRAIGHTENER/CONDITIONER

Axel P. Hillesheim, 707 Winford Ave., Green Bay, Wis. 54303, and Andrew M. Bray, 3244 Maple Grove, Suamico, Wis. 54173

Filed Dec. 22, 1983, Ser. No. 564,395
Int. Cl.[4] C05B *7/00*
U.S. Cl. 156—64 **12 Claims**

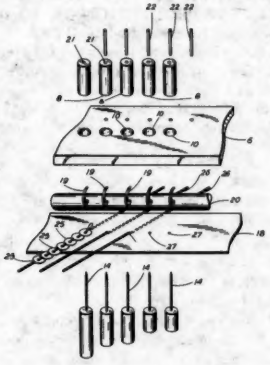


1. An arrow straightening apparatus comprising a base, arrow shaft support means adjustably mounted on said base, and indicator means adjustably mounted on said base for determining any eccentricity or radial irregularity in said arrow shaft, the improvement comprising an attachment for rotatably supporting nocks or heads for placement on said shafts in aligned relationship.

4,623,411
METHOD AND APPARATUS FOR PRODUCING AND ATTACHING SEQUINS

Axel Pollak, and Sondra Stein, both of 355 E. 72nd St., New York, N.Y. 10021

Filed Aug. 19, 1985, Ser. No. 766,946
Int. Cl.[4] B32B 31/10, 7/08
U.S. Cl. 156—93 28 Claims



1. Apparatus for producing decorative material including frame members defining a work station, a punch and die assembly located at said work station to stamp a sequin from a web, and cooperating needle and looper means arranged at said work station to engage and attach said sequin to backing material.

19. A method of producing decorative material including the steps of forming a sequin and attaching said sequin to a backing material, wherein said sequin is stamped from a web at a work station and is engaged by a stitching needle at said work station and attached to said backing material.

4,623,412
RESIN IMPREGNATED BOARD

Reinhard D. Bohme, Minneapolis, and Steven D. Overholt, Eagan, both of Minn., assignors to Champion International Corporation, Stamford, Conn.

Continuation of Ser. No. 605,662, Apr. 30, 1984, abandoned.
This application Aug. 26, 1985, Ser. No. 768,935
Int. Cl.[4] B31F 1/28; B05D 1/36
U.S. Cl. 156—210 11 Claims

1. A process for producing a resin impregnated linerboard for use in the production of corrugated board, wherein the surfaces of said resin impregnated linerboard have substantially no resinous material thereon, said process comprising, in sequence,

providing an aqueous impregnating composition comprising:
- (a) urea-aldehyde resin,
- (b) a catalyst,
- (c) a wetting agent, and
- (d) from 0 to about 20 percent of a solvent, providing a linerboard substrate,

applying said aqueous impregnating composition to at least one surface of said linerboard substrate to from a coating thereon,

applying an aqueous primer onto said coating of said impregnating composition such that said aqueous primer causes said impregnating composition to permeate said linerboard substrate to provide said linerboard substrate with a substantially polymeric core and having substantially no resinous material on the surfaces thereof,

drying said impregnated linerboard under conditions for fully curing said urea-aldehyde resin to provide said linerboard with a substantially solid resinous core and having surfaces substantially free of said urea-aldehyde resin,

remoistening said fully cured linerboard, and

passing the remoistened linerboard to a corrugator for incorporation into the corrugatated board.

4,623,413
METHOD OF PROTECTING DECORATIVE MATERIAL WITH RELEASE FILM

John M. Questel, Stow, and Ralph J. Madonia, Kent, both of Ohio, assignors to Morgan Adhesives Company, Stow, Ohio

Division of Ser. No. 353,625, Mar. 1, 1982, Pat. No. 4,499,130.
This application Jan. 14, 1985, Ser. No. 690,961
Int. Cl.[4] B32B 7/06
U.S. Cl. 156—247 6 Claims

1. A method of protecting applied material such as carpeting and decorative material for vehicles comprising the steps of:
- (A) coating one surface of plastic film with a cross-linked acrylic, resin based pressure sensitive adhesive which resists adhesive transfer to the applied material;
- (B) applying said film to a decorative face of the applied material;
- (C) cutting and thermoforming the applied material to its final configuration;
- (D) installing the applied material in the vehicle to leave the plastic film exposed;
- (E) completing fabrications of the vehicle; and
- (F) removing the film.

4,623,414
PROCESS FOR PREPARING AN AQUEOUS UNDERTREAD ADHESIVE COMPOSITION

Wendell Collins, Adrian, Mich., and Howard L. Brooks, Sylvania, Ohio, assignors to SWS Silicones Corporation, Adrian, Mich.

Division of Ser. No. 460,215, Jan. 24, 1983, Pat. No. 4,463,120.
This application Jul. 12, 1984, Ser. No. 630,340
Int. Cl.[4] C09J 5/02
U.S. Cl. 156—307.5 16 Claims

1. A process for bonding unvulcanized rubber compounds which comprises coating at least one surface of the rubber compounds to be bonded together with an aqueous emulsion, drying the coated surface, contacting the coated surface of the rubber compounds and thereafter vulcanizing the rubber compounds, said aqueous adhesive emulsion is prepared by dispersing a premilled mixture containing rubber selected from the group consisting of natural rubber, synthetic rubber and mixtures thereof, a rubber reinforcing agent in an amount of from about 10 to 40 parts by weight per 100 parts by weight of rubber, a vulcanizing agent in an amount of from about 1 to about 8 parts by weight per 100 parts by weight of rubber, said vulcanizing agent is selected from the group consisting of sulfur, sulfur containing compounds, organic peroxides, metallic oxides, selenium and tellurium and an accelerator that is compatible with the mixture and is selected from the group consisting of mono- and di-sulfides, thiocarbamates, sulfenamides, thiazoles, quanidines, fatty acids having from 10 to 22 carbon atoms and oxides of zinc and magnesium with up to about 600 parts by weight per 100 parts by weight of rubber of an organic solvent for the rubber, and from about 5 to 70 parts by weight per 100 parts by weight of rubber of a tackifying resin which is soluble in the organic solvent to form a solvent dispersion, said organic solvent is selected from the group consisting of aliphatic hydrocarbons, cyclic hydrocarbons, aromatic hydrocarbons, naphtha and chlorinated hydrocarbons and thereafter emulsifying the solvent dispersion in the presence of an emulsifying agent and water to form an aqueous emulsion, in which the emulsifying agent is selected from the group consisting of anionic, cationic and non-ionic emulsifying agents and mixtures thereof.

2. A process for building a rubber tire which comprises coating a surface of tread stock with an aqueous adhesive

emulsion, drying the coated surface, contacting the coated surface of the tread stock with a portion of a tire carcass and thereafter vulcanizing the tread stock and tire carcass, said aqueous adhesive emulsion is prepared by dispersing a premilled mixture containing rubber selected from the group consisting of natural rubber, synthetic rubber and mixtures thereof, a rubber reinforcing agent in an amount of from about 10 to 40 parts by weight per 100 parts by weight of rubber, a vulcanizing agent in an amount of from about 1 to about 8 parts by weight per 100 parts by weight of rubber, said vulcanizing agent is selected from the group consisting of sulfur, sulfur containing compounds, organic peroxides, metallic oxides, selenium and tellurium and an accelerator that is compatible with the mixture and is selected from the group consisting of mono- and di-sulfides, thiocarbamates, sulfenamides, thiazoles, quanidines, fatty acids having from 10 to 22 carbon atoms and oxides of zinc and magnesium with up to about 600 parts by weight per 100 parts by weight of rubber of an organic solvent for the rubber and from about 5 to 70 parts by weight per 100 parts by weight of rubber of a tackifying resin which is soluble in the organic solvent to form a solvent dispersion, said organic solvent is selected from the group consisting of aliphatic hydrocarbons, cyclic hydrocarbons, aromatic hydrocarbons, naphtha and chlorinated hydrocarbons and thereafter emulsifying the solvent dispersion in the presence of an emulsifying agent and water to form an aqueous emulsion, in which the emulsifying agent is selected from the group consisting of anionic, cationic and non-ionic emulsifying agents and mixtures thereof.

4,623,415

METHOD OF MAKING FUEL CELL

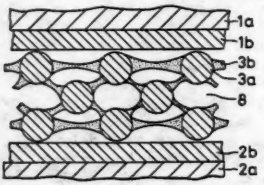
Toshiki Kahara; Shinpei Matsuda; Kenzo Ishii, all of Toukai; Seizi Takeuchi, Hitachiohta; Jinichi Imahashi, and Akio Honji, both of Hitachi, all of Japan, assignors to Hitachi, Ltd. and Hitachi Chemical Co., Ltd., both of Tokyo, Japan

Division of Ser. No. 414,394, Sep. 2, 1982, Pat. No. 4,529,671. This application Jan. 18, 1985, Ser. No. 692,562

Claims priority, application Japan, Sep. 7, 1981, 56-141525; Sep. 7, 1981, 56-141524

Int. Cl.[4] C09J *1/00*

U.S. Cl. 156—325 **17 Claims**



1. A process for producing a phosphoric acid-type fuel cell comprising a step of interposing a phosphoric acid electrolyte-retaining matrix between a pair of gas-diffusion electrodes, the electrolyte-retaining matrix being prepared by a method comprising the following steps:

(1) preparing a mixture consisting essentially of silicon carbide powder and a metal phosphate-forming inorganic material, said silicon carbide powder having an average particle size of 0.1 to 10 μm;

(2) adding phosphoric acid in an amount larger than that required for forming a phosphate by the reaction with the inorganic material to the mixture; and

(3) heating the phosphoric acid-containing mixture to a temperature of 100°–250° C. to form the metal phosphate as a binder bonding the silicon carbide together and to form a matrix retaining phosphoric acid as electrolyte therein; said matrix consisting essentially of 30–90 weight % of silicon carbide powder and 10–70 weight % of the metal phosphate.

4,623,416

AQUEOUS SOLUTIONS OR DISPERSIONS OF POLYISOCYANATE POLYADDITION PRODUCTS, A PROCESS FOR THEIR PRODUCTION AND THEIR USE AS, OR IN THE PRODUCTION OF, ADHESIVES

Wolfgang Henning, Kuerten; Rudolf Hombach, Leverkusen; Walter Meckel, Neuss, and Helmut Reiff, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 26, 1984, Ser. No. 675,042

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1983, 3344693

Int. Cl.[4] C09J *3/14;* C08G *18/44*

U.S. Cl. 156—331.7 **8 Claims**

1. A process for binding substrates wherein at least one substrate is rubber which comprises applying an aqueous solution or dispersion of polyisocyanate polyaddition products containing about 2 to 200 milliequivalents per 100 g of solids of chemically incorporated ternary or quaternary ammonium groups and up to about 25% by weight, based on solids, of incorporated ethylene oxide units present within terminally and/or laterally arranged polyether chains, wherein the polyisocyanate polyaddition products contain about 20 to 95% by weight of polyester segments Q incorporated through urethane groups, wherein

Q represents a radical of the type obtained by removing the hydroxyl groups from

(i) diarboxylic acid polyester polyols having a molecular weight in the range of about 700 to 1400 and/or

(ii) hydroxyl-terminated lactone homopolymers or copolymers having a molecular weight in the range of about 1000 to 2000 to a first substrate and subseqeuntly placing an additional substrate in contact with said first substrate.

4,623,417

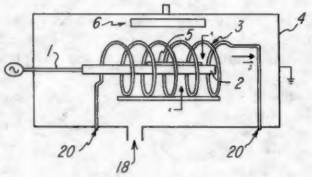
MAGNETRON PLASMA REACTOR

John E. Spencer; Duane Carter, both of Plano, and Dave Autery, Richardson, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 23, 1985, Ser. No. 768,547

Int. Cl.[4] C23F *1/02;* B44C *1/22;* C03C *15/00;* H01L *21/306*

U.S. Cl. 156—345 **16 Claims**



1. A plasma reactor comprising:

a vacuum chamber;

means for supplying predetermined gases at a predetermined pressure to said vacuum chamber;

a solenoidal coil defining a space therein;

means for supplying current to said coil;

a susceptor intruding into the space defined by said coil, and capable of supporting a semiconductor wafer in the space defined by said coil; and

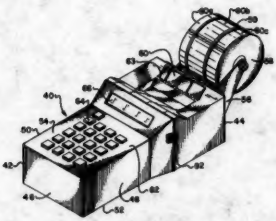
means for supplying rf power to said susceptor.

4,623,418

ELECTRONIC HAND HELD TAPE LABELER

Peter P. Gombrich, Minneapolis; John A. Uttermark, White Bear Lake; Sidney L. Schmid, St. Paul, and Denis L. Larson, New Brighton, all of Minn., assignors to ADC Telecommunications, Minneapolis, Minn.

Filed Dec. 10, 1984, Ser. No. 679,924
Int. Cl.[4] G06K *15/22*
U.S. Cl. 156—361 19 Claims



1. A hand held labeler apparatus, comprising:

a. a housing having a front end portion and a back end portions, the housing further having a top portion, two spaced apart side portion, and a bottom portion, the bottom portion and the side portions being adapted for being engaged by a user's hand;

b. label support means interconnected to and supported by the housing for supporting a composite web of label material releasably adhered to a backing strip of material, the composite web having a longitudinal axis and a transverse axis;

c. power supply means positioned within and supported by the housing for providing electrical energy required to operate the labeler apparatus;

d. printer means supported by the housing for printing on the label material at a printing position, the printer means including an X-Y plotter apparatus electrically interconnected to the power supply means, the X-Y plotter apparatus including marking means for applying indicia on the label material, the indicia being applied at the printing position on a side of the label material facing the user;

e. drive means supported by the housing for advancing the composite web in a direction generally parallel to the longitudinal axis of the composite web past the printing position into printing relationship with the printer means, the drive means further including means for moving the marking means transversely of the composite web;

f. keyboard supported on the top portion of the housing for entering user-selected label information to be printed on the label material by the printer means and for entering operational information for controlling operation of the keyboard and the printer means;

g. display means supported by the housing displaying the selected information to be printed by the printer means; and

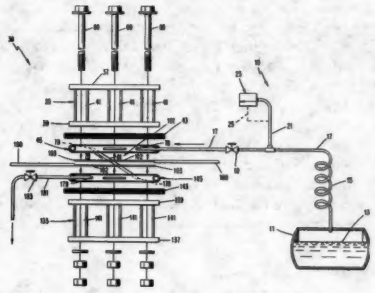
h. control processor means supported by the housing and electronically interconnected to the keyboard for receiving and processing data representative of the user selected label information and operational information entered at the keyboard, the control means being electrically interconnected to the display means for transmitting to the display means data representative of the selected information to be displayed at the display means, the control means being further electrically interconnected to the printer means for transmitting to the printer means data representative of the user selected label information to be printed on the label material by the printer means, the control processor means being further electrically interconnected to the drive means for advancing the label material as required for printing.

4,623,419

STEAM SACK VULCANIZING APPARATUS

John G. Price, 173 Tensaw Rd., Montgomery, Ala. 36117

Division of Ser. No. 629,052, Jul. 9, 1984, abandoned. This application Apr. 3, 1985, Ser. No. 719,581
Int. Cl.[4] B32B *31/20;* B29C *17/00*
U.S. Cl. 156—502 9 Claims



1. An apparatus for vulcanizing a rubber article at a splice area thereof comprising:

(a) a pair of opposed frame members;

(b) steam sack means mounted on each frame member each said steam sack means comprising a generally rectangular frame and a thin metallic skin mounted in surrounding relation about said frame;

(c) means for releasably fastening said frame members together so as to retain said rubber article between said steam sack means; and

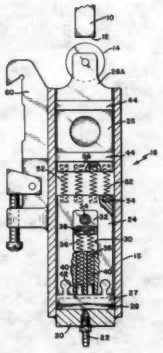
(d) steam supply means for supplying steam to said steam sack means at a pressure of at least 60 psi whereby said steam applies both pressure and vulcanizing temperature to said rubber article.

4,623,420

ANVIL FOR ULTRASONIC SLITTING APPARATUS

Charles H. Hinkley, Bethel, Conn., assignor to Branson Ultrasonics Corporation, Danbury, Conn.

Filed Jun. 6, 1985, Ser. No. 742,048
Int. Cl.[4] B29C *65/08;* B32B *31/18*
U.S. Cl. 156—515 7 Claims



1. An anvil for an ultrasonic slitting device comprising:

a substantially rectangular, elongated housing;

a first and a second piston slidably mounted in spaced relation to one another within said housing for limited motion

relative to one another along the longitudinal axis of said housing;

an aperture disposed in said first piston;

a guide disposed in said aperture and secured to said housing for guiding and limiting the motion of said first piston along said longitudinal axis;

first spring means disposed between said guide and said first piston for urging said first piston toward one end of said housing;

means disposed at said one end of said housing for causing responsive to fluid pressure said first piston to be driven in a direction away from said one end and counter to the force exerted by said first spring means;

second spring means disposed between said first piston and said second piston for urging said second piston in a direction along said longitudinal axis away from said first piston and toward the other end of said housing, and

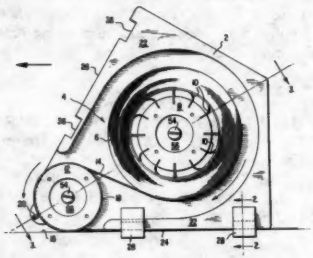
slitting means extending from said other end of said housing and mounted to said second piston for being responsive to the motion of said second piston along said longitudinal axis.

4,623,421

TAPE APPLICATOR

Auther B. Cardin, 1527 North Water, Cape Girardeau, Mo. 63701

Filed Jul. 24, 1984, Ser. No. 634,476
Int. Cl.[4] B32B *31/18, 31/20*
U.S. Cl. 156—523 **8 Claims**



1. Apparatus for applying tape to an object comprising

body means,

spindle means mounted on said body means for receiving a roll of tape and allowing said roll of tape to rotate about a first axis,

pressure roller means mounted on said body for receiving tape from said roll of tape on an outer surface thereof and pressing said tape onto said object, said pressure roller means being mounted for rotation about a second axis parallel to said first axis and having a side perpendicular to said second axis and wherein said body means comprises a first guide means having a substantially flat elongate surface which lies in a plane tangent to said outer surface of said pressure roller and has a first side portion coplanar with said side of said pressure roller whereby alignment of said first guide means will also align said pressure roller,

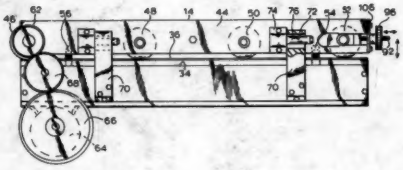
said body means further comprising a second guide means having a second substantially flat elongate surface which lies in a second plane tangent to said outer surface of said pressure roller and including a second side portion coplanar with said side of said pressure roller.

4,623,422

FABRIC FUSING MACHINE

Carl E. Lindquist, Lakeville, Pa., assignor to M.A.C. Textile Machine Co., Inc., Moscow, Pa.

Continuation-in-part of Ser. No. 611,718, May 18, 1984, abandoned. This application Feb. 27, 1985, Ser. No. 706,398
Int. Cl.[4] B30B *5/04, 15/34*
U.S. Cl. 156—583.5 **3 Claims**



1. A fabric fusing device comprising:

a heating box having a flat surface;

a conveyor assembly disposed above the heating box and having a continuous belt structured and arranged to rotate at a predetermined minimum distance above said flat surface;

means for driving said belt; and

hinging means pivotably connecting said conveyor assembly to said heating box;

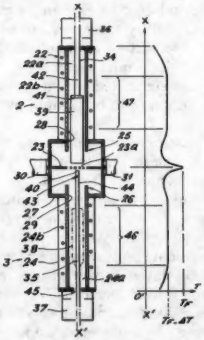
said conveyor assembly comprising a rectangular frame; a drive roller for driving said belt; an end roller with two opposed pins; and two independent mounting means for mounting the pins; each having a ring for engaging one of the pins, a ring retaining means for pivotably holding said rings, said rings being rotatable around a vertical axis; and adjusting means for adjustably securing said ring retaining means to said frame.

4,623,423

PROCESS FOR PRODUCING A STRAIN-FREE MONOCRYSTAL OF A CRYSTALLINE FERROELECTRIC COMPOUND

Jean-Jacques Aubert, Saint Egreve; Bernard Bechevet, Claix, and Jacques Daval, Meylan, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Apr. 28, 1983, Ser. No. 489,416
Claims priority, application France, May 4, 1982, 82 07727
Int. Cl.[4] C30B *1/02*
U.S. Cl. 156—603 **11 Claims**



1. A process for the production of a strain-free monocrystal of a ferroelectric compound having a crystalline structure, wherein it comprises producing a monocrystal of the ferroelec-

tric compound, annealing this monocrystal immediately following the production thereof, said annealing being performed in a zero temperature gradient, at a tmperature corresponding to the plastic range of the ferroelectric compound and below the melting temperature thereof, followed by a cooling of the monocrystal, constantly maintained in a longitudinal zero temperature gradient.

4,623,424

PROCESS FOR PRODUCING TIN OXIDE FIBERS

Kenji Uchida, and Eisuke Bannai, both of Sakura, Japan, assignors to National Institute For Researches In Inorganic Materials, Ibaraki, Japan

Filed Sep. 6, 1984, Ser. No. 647,656

Claims priority, application Japan, Sep. 7, 1983, 58-164762; Feb. 1, 1984, 59-17596; Jul. 4, 1984, 59-138571; Jul. 10, 1984, 59-142800

Int. Cl.[4] C30B *23/00*

U.S. Cl. 156—610 **1 Claim**

1. A process for producing tin oxide fibers, which comprises forming a melt comprising a solute consisting essentially of tin oxide and a solvent selected from the group consisting of tin or a tin alloy, evaporating the solute from the melt, and introducing the evaporated solute to a low temperature zone, whereby tin oxide fibers are permitted to precipitate and grow in the low temperature zone.

4,623,425

METHOD OF FABRICATING SINGLE-CRYSTAL SUBSTRATES OF SILICON CARBIDE

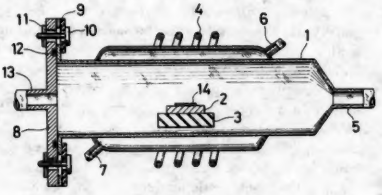
Akira Suzuki, Nara; Katsuki Furukawa; Yoshiyuki Higashigaki, both of Tenri, and Shigeo Harada, Isehara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 24, 1984, Ser. No. 603,454

Claims priority, application Japan, Apr. 28, 1983, 58-76842

Int. Cl.[4] C30B *25/02*

U.S. Cl. 156—613 **13 Claims**



1. A method of fabricating a single-crystal substrate of silicon carbide comprising the steps of:

(a) first depositing a uniform thin film of polycrystalline or amorphous silicon carbide, grown using the CVD method at a low temperature, on a surface of a silicon substrate, said low temperature being below the temperature at which silicon carbide single-crystal growth occurs, and

(b) thereafter growing on top of the thin film deposited in the first step a single-crystal film of silicon carbide using the CVD method at a higher temperature than that used in the first step, said higher temperature being a temperature at which silicon carbide single-crystal growth occurs.

4,623,426

LOW TEMPERATURE PROCESS FOR DEPOSITING EPITAXIAL LAYERS

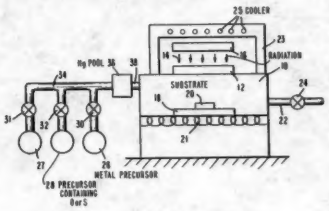
John W. Peters, Malibu, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 391,073, Jun. 22, 1982, abandoned. This application Feb. 8, 1985, Ser. No. 700,051

The portion of the term of this patent subsequent to Feb. 1, 2000, has been disclaimed.

Int. Cl.[4] C30B *25/02*

U.S. Cl. 156—614 **13 Claims**



1. A low temperature process for depositing an epitaxial layer of an oxide of a chosen element on the surface of a selected substrate which comprises:

(a) providing a selected substrate having a preferred crystallographic orientation at the surface thereof; and ined

(b) exposing said surface at a predetermined temperature to a selected vapor phase reactant containing said element, in the presence of neutral, charge-free oxygen atoms and thereby reacting said oxygen atoms with said reactant in a manner sufficient to form said oxide and induce the crystalline grow th of said oxide as said epitaxial layer on said surface of said substrate while simultaneously avoiding damage to said substrate by charged particles or high energy radiation and minimizing thermal damage to said substrate, wherein the crystal structure of said oxide forms an extension of said preferred crystallographic orientation of said surface of said substrate.

4,623,427

MEANS AND METHOD FOR A SELF-ALIGNED MULTILAYER LASER EPITAXY STRUCTURE DEVICE

Donald E. Ackley, Lambertville, N.J.; Reinhart W. H. Engelmann, Mountain View, and Teruko K. Inouye, Palo Alto, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 12, 1983, Ser. No. 522,918

Int. Cl.[4] H01L *21/20, 21/306;* H01S *3/19*

U.S. Cl. 156—647 **4 Claims**

1. A method of aligning contacts over a nonplanar feature on a semiconductor substrate comprising the steps of:

orienting the semiconductor substrate in a (100) crystal plane as a first preselected crystal plane;

etching the nonplanar feature into the crystallographically oriented surface of the first preselected crystal plane of the substrate along the normal vector of a second preselected crystal plane to expose a third preselected crystal plane;

growing a top epitaxy layer on the substrate over the nonplanar feature, wherein the portion of the top epitaxy layer

conforming to the nonplanar feature forms a fourth preselected crystal plane;

free-etching the top layer non-isotropically to effect a differential etch rate between the first and fourth crystal planes to remove substantially only the portions of the top layer over the first crystal plane; and

applying a contacting layer to the substrate over the top layer to provide differing contacts in response to the presence and absence of the top layer, thereby effecting a contact layer self-aligned to the nonplanar feature,

wherein the second preselected crystal plane is (011) and the third and fourth preselected crystal planes are (111)A.

4,623,428

PROCESS FOR SIZING PAPER WITH ANIONIC HYDROPHOBIC SIZING AGENTS AND CATIONIC RETENTION AIDS

Michael Bernheim, Arlesheim; Hubert Meindl, Riehen; Peter Rohringer, Schönenbuch; Hans Wegmüller, Riehen, and Dieter Werthemann, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

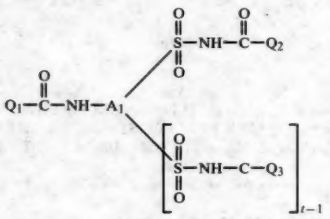
Filed Oct. 22, 1984, Ser. No. 663,740

Claims priority, application Switzerland, Oct. 27, 1983, 5819/83

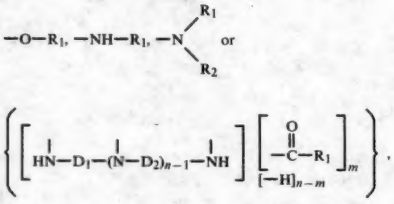
Int. Cl.[4] D21H *3/12*

U.S. Cl. 162—158 **9 Claims**

1. A process for sizing paper or cardboard, which comprises adding to an aqueous cellulose-containing fiber suspension (A) a sizing agent of the formula



wherein A_1 is a divalent or trivalent aliphatic cycloaliphatic or aromatic radical of up to 10 carbon atoms, Q_1, Q_2 and Q_3 are each



D_1 and D_2 are each ethylene or propylene, R_1 and R_2 are each alkyl or alkenyl of 8 to 22 carbon atoms, n is an integer from 1 to 5, t is 1 or 2, and m is an integer from 1 to n, and (B) a polymeric cationic retention aid.

4,623,429

TWIN-WIRE FORMING SECTION OF A PAPER MACHINE

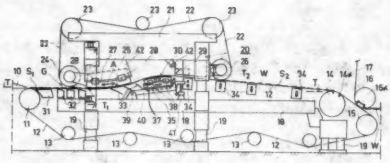
Martti Tissari, Jyvaskyla, Finland, assignor to Valmet Oy, Finland

Continuation of Ser. No. 298,469, Sep. 1, 1981, abandoned. This application Sep. 26, 1983, Ser. No. 535,750

Claims priority, application Finland, May 15, 1981, 811514

Int. Cl.[4] D21F *1/36, 9/02*

U.S. Cl. 162—300 **19 Claims**



1. In a twin-wire forming section of a paper machine including a lower wire loop defining an initial single-wire portion having a substantially planar run, said single-wire portion having dewatering means and being defined by an initial portion of the wire of said lower wire loop, said initial single-wire portion being followed in the direction of web run by an upper wire loop having a lower run forming a twin-wire portion with a coinciding upper run of the wire of said lower wire loop, said twin-wire portion having dewatering means for dewatering a web in said twin-wire portion through the wire of said lower wire loop and the wire of said upper wire loop, the improvement comprising:

said twin-wire portion being located above the level of the planar run of said initial single-wire portion;

said twin-wire portion including at least two curved dewatering elements successively situated in the direction of web run; wherein

a first of said dewatering elements in the direction of web run comprises a first forming shoe situated within said upper wire loop, said twin-wire portion curving upwardly over a first sector on said forming shoe so that dewatering occurs primarily through the wire of said lower wire loop;

a second of said dewatering elements in the direction of web run comprises a second forming shoe situated within said lower wire loop, said twin-wire portion curving downwardly over a second sector on said second forming shoe so that dewatering occurs primarily through the wire of said upper wire loop;

first guide and moving means in operative proximity with said first forming shoe for adjustably positioning the same independently from said second shoe; and

second separate guide and moving means in operative proximity with said second forming shoe for adjustably positioning the same independently from said first shoe; wherein

said first guide and moving means comprise first means for pivoting said first forming shoe about a pivot point; and

said second guide and moving means comprise second separate means for pivoting said second forming shoe about a second pivot point; and

said second guide and moving means additionally comprise first means for adjusting position of said second shoe in a direction substantially parallel to the direction of web run; and

second means for adjusting position of said second forming shoe in a direction substantially perpendicular to the direction of web run.

4,623,430
POLYMERIZATION INHIBITOR FOR VINYL AROMATIC COMPOUNDS

Kevin P. Menard; James R. Butler, and James M. Watson, all of Big Spring, Tex., assignors to Cosden Technology, Inc., Dallas, Tex.

Filed Jul. 18, 1985, Ser. No. 756,414
The portion of the term of this patent subsequent to Nov. 18, 2003, has been disclaimed.
Int. Cl.[4] B01D *3/34*
U.S. Cl. 203—9 **17 Claims**

1. A process for the distillation of polymerizable vinyl aromatic compounds which comprises subjecting said compounds to distillation conditions in the presence of oxygen and an effective amount of a polymerization inhibitor selected from the group consisting of asphalts, asphaltenes and combinations thereof, to inhibit polymerization of said compounds, wherein the inhibitor is pretreated by bubbling an oxidant through it for a sufficient time to substantially increase the free radial content therein.

13. A process for the distillation of polymerizable vinyl aromatic monomers which comprises:

(a) introducing said vinyl aromatic monomers into a distillation flask with from about 0.01 to about 5.0 weight percent of a polymerization inhibitor selected from the group consisting of asphalts, asphaltenes and combinations thereof wherein the inhibitor is pretreated by subjecting said inhibitor to air-blowing for from about one minute to about thirty minutes,

(b) subjecting the mixture to distillation conditions while bubbling oxygen through the mixture, and

(c) recovering said vinyl aromatic monomer.

4,623,431
POLYMERIZATION INHIBITOR FOR VINYL AROMATIC COMPOUNDS

Debra L. Kendall, Hornick, Iowa; James R. Butler, and Kevin P. Menard, both of Big Spring, Tex., assignors to Cosden Technology, Inc., Dallas, Tex.

Filed Jul. 18, 1985, Ser. No. 756,155
Int. Cl.[4] B01D *3/34*
U.S. Cl. 203—9 **18 Claims**

8. A process for the distillation of polymerizable vinyl aromatic compounds which comprises subjecting said compounds to distillation temperatures of from about 65° C. to about 150° C. in the presence of oxygen and from about 0.01 to about 5.0 percent by weight asphaltenes.

13. A process for the distillation of polymerizable vinyl aromatic monomers which comprises:

(a) introducing said vinyl aromatic monomers into a distillation flask with from about 0.01 to about 5.0 weight percent asphaltenes,

(b) subjecting the mixture to distillation conditions while bubbling oxygen through the mixture, and

(c) recovering said vinyl aromatic monomer.

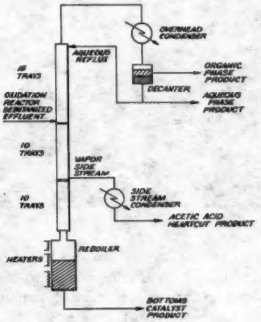
4,623,432
REMOVAL OF BROMINATED ORGANICS FROM ACETIC ACID OBTAINED BY OXIDATION OF LIQUID BUTANE IN PRESENCE OF Co-Br OR Co-Mn-Br SYSTEM CATALYSIS

Moinuddin H. Ali, Naperville, Ill., assignor to Amoco Corporation, Chicago, Ill.

Filed Apr. 23, 1984, Ser. No. 603,079
Int. Cl.[4] C07C *51/44*
U.S. Cl. 203—98 **10 Claims**

1. A fractional distillation method for removing bromo-organic compounds and water from an acetic acid-containing liquid oxidation effluent comprising the impurity 3-bromo-2-butanone, said effluent resulting from catalytic oxidation of liquid n-butane with oxygen gas in the presence of an acetic acid solution wherein the catalyst system comprises ions of bromine in combination with ions of cobalt or of manganese and cobalt followed by decompression of the acetic acid-containing liquid oxidation effluent to a gauge pressure of from about 3.5 up to about 21 kg/cm^2 to release unoxidized n-butane and coproduct gases therefrom said fractional distillation method comprising, in a fractionating system having a lower stripping zone, an upper rectification zone with a feed entrance between these zones, and a reboiling zone below the stripping zone the steps of:

separating 3-bromo-2-butanone present in the acetic acid-containing liquid oxidation effluent from the acetic acid present therein by fractionally distilling the effluent, which effluent includes essentially all of the 3-bromo-2-butanone impurity produced during the catalytic oxidation of liquid n-butane, to remove from the effluent a top



fraction comprising a mixture including acetic acid, water, ketones, esters of acetic acid and 3-bromo-2-butanone, such mixture boiling at a temperature below the boiling temperature of acetic acid, said top fraction removal being accomplished by operating the rectification zone at a top gauge pressure of about 0 kg/cm^2 to provide a top vapor product comprising 3-bromo-2-butanone and having a temperature below about 100° C. but above about 68° C.; and cooling the vapor product to condense a top liquid product;

collecting the resulting top liquid product and permitting it to settle into two immiscible layers, i.e., an upper layer of organic product and a lower layer of aqueous product; and

recycling aqueous product to the fractionation system.

4,623,433
PROCESS FOR ORIENTING AND ACCELERATING THE FORMATION OF CONCRETIONS IN A MARINE ENVIRONMENT

Antonius O. Streichenberger, Nantes, France, assignor to Societe Responsabilite Limitee REP MARINE les Rochereaux, Le Cellier, France

Filed Feb. 4, 1985, Ser. No. 697,763
Claims priority, application France, Feb. 3, 1984, 84 01697
Int. Cl.[4] C25B *1/00;* **C25D** *9/08*
U.S. Cl. 204—1 R **11 Claims**

1. Process for orienting and accelerating the formation of concretions in a marine environment, wherein a metallic cathode having a shape corresponding to the skeleton of the concretion to be obtained and an anode made of a metal or a metallic alloy which is more electronegative than the metal or the alloy of the cathode are used by immersing the anode and the cathode in an amphoteric electrolyte containing magnesium, calcium and carbonate ions, and by electrically interconnecting the two electrodes, characterized in that the ratio of the surface of the anode to the surface of the cathode is between 1/30 and 2/1, with the anode mass sufficient to keep this

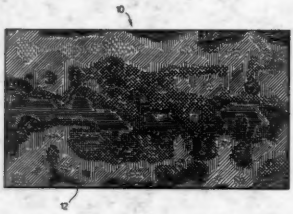
ratio within said limits during a period of time comprised between a few days and one year.

4,623,434

METHOD OF DETERMINING CATHODIC CORROSION AND DISPLAYING

John P. Nicholson, R.R. 5, Orangeville, Canada (L9W 2Z2), and Douglas W. Pressley, 71 Celeste Drive, Westhill, Canada (M1E 2E4)

Filed Jan. 31, 1983, Ser. No. 462,404
Int. Cl.[4] G01N *27/46*
U.S. Cl. 204—1 T **3 Claims**



1. A method of representing corrosion in a reinforced concrete structure, said method comprising the steps of:

(a) measuring electrolytic voltage potentials at predetermined locations on said structure;

(b) deriving at least one further electrolytic voltage potential intermediate said measured voltage potentials and from said measured voltage potentials to indicate the potential gradient between adjacent measured potentials;

(c) assigning to each measured and derived electrolytic voltage potential an x, y and z coordinate wherein the x and y coordinates relate to the relative position of the respective electrolytic potential voltage on the structure, and the z coordinate relates to the value of the electrolytic voltage potential;

(d) selecting a plurality of distinguishable colour indicia each one of which represents a predetermined range of electrolytic voltage potentials;

(e) assigning to each electrolytic voltage potential a colour indicia within whose predetermined range the value of the electrolytic voltage potential lies;

(f) marking the colour indicia representative of each electrolytic voltage potential on a surface of reduced scale from said structure in accordance with the x and y coordinates of each electrolytic voltage potential to provide a substantially continuous permanent representation of corrosion activity in the structure.

4,623,435

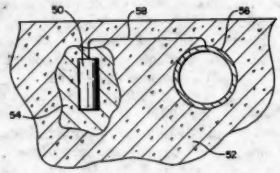
BACKFILL FOR MAGNESIUM ANODES

John W. Nebgen, Eureka, Ill., and Gary D. Hinshaw, Kansas City, Mo., assignors to Columbia Gas System Service Corporation, Columbus, Ohio

Filed Sep. 1, 1983, Ser. No. 528,610
Int. Cl.[4] C23F *13/00*
U.S. Cl. 204—148 **16 Claims**

1. A method of improving the efficiency of a magnesium anode comprising:

contacting at least a part of the surface of said anode with a backfill composition comprising an anion-releasing material capable of releasing at least one of fluoride and silicate anions in water-soluble form and wherein said anion-releasing material comprises at least one of calcium fluoride, magnesium silicate, cryolite and sodium silicofluoride.

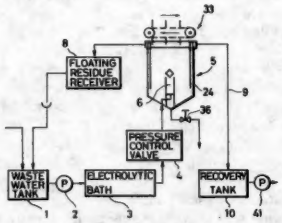


4,623,436

METHOD AND APPARATUS FOR REMOVING IMPURITIES FROM LIQUIDS

Yoshio Umehara, Hoya, Japan, assignor to Showakoki Co., Ltd., Tokyo, Japan

Filed Jan. 10, 1986, Ser. No. 817,690
Claims priority, application Japan, Jan. 10, 1985, 60-2413; Apr. 24, 1985, 60-88399; Sep. 27, 1985, 60-214208
Int. Cl.[4] C02F *1/46*
U.S. Cl. 204—149 **9 Claims**



1. A method of removing impurities from a liquid, comprising the steps of:

forming electrodes using a metal which easily dissolves upon electrolysis and produces a hydroxide;

installing said electrodes in a pressure vessel;

continuously supplying a liquid containing impurities from an inlet of said pressure vessel at a pressure higher than atmospheric pressure;

continuously supplying the liquid from an outlet of said pressure vessel to an inlet of a tank at atmospheric pressure;

continuously discharging the liquid from an outlet of said tank;

performing electrolysis by applying a voltage to said electrodes while the liquid is passed through said pressure vessel, thereby causing the impurities to flocculate; and

passing the liquid through the pressure vessel and the tank, wherein the then produced fine bubbles attached to the flocculated impurities to rise to the surface and seperate the impurities.

4,623,437

CATALYSTS FOR PHOTO-ASSISTED OXIDATION-REDUCTION REACTIONS

Mario Visca, Alessandria, and Carlo Scotti, Voghera, both of Italy, assignors to Sibit S.p.A., Milan, Italy

Filed Jul. 15, 1982, Ser. No. 398,338
Claims priority, application Italy, Jul. 20, 1981, 23029 A/81
Int. Cl.[4] B01J *19/12, 27/14, 27/188, 27/02*
U.S. Cl. 204—157.47 18 Claims

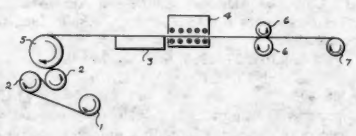
1. Catalysts for photo-assisted oxidation-reduction (redox) reactions, such as the photodecomposition of water, the photodecomposition of H_2S, the photoreduction of CO_2, and the photodecarboxylation of carboxylic acids, characterized in that the catalysts consist essentially of colloidal particles of a semiconductor which contain, on their surface, a reduction catalyst and an oxidation catalyst; that the semiconductor has a difference of energy between valence band and conduction band such as to permit the hole-electron separation by absorption of visible light; and that the conduction electron has such a reducing potential and the hole in the valence band has such an oxidizing potential as to allow, in the presence of the aforesaid reduction and oxidation catalysts, the accomplishment of the redox reaction; and wherein the semiconductor is selected from the group consisting of TiO_2 doped with Mn, Cr, or Cr and Nb; CdS doped with In or Ga; $SrTiO_3$ doped with Cr or Mn; and cadmium sulphoselenide, said reduction catalyst being selected from the group consisting of platinum, iridium, palladium, rhodium, osmium, silver and gold, and said oxidation catalyst being selected from the group consisting of oxides of ruthenium, platinum, iridium, manganese, iron, cobalt and tantalum.

4,623,438

ELECTRET MAKING PROCESS USING CORONA DISCHARGE

Clinton D. Felton, Charlotte; Baylor D. Gibson, Waxhaw; Charles E. Jamison, Charlotte; William O. McWhorter, Monroe, and George A. Serad, Charlotte, all of N.C., assignors to Celanese Corporation, New York, N.Y.

Filed Nov. 8, 1983, Ser. No. 550,069
Int. Cl.[4] C07C *3/24*
U.S. Cl. 204—168 6 Claims



1. A method for the manufacture of a constant cross-section fiber electret comprising, passing a warp beam of tightly packed synthetic polymeric yarn, said polymeric yarn having a fiber cross-section characterized by apexes such as to produce asymmetric electric field strength, said polymeric yarn being free of additives that would reduce resistivity and having a warp density as determined by light transmission of not more than 40% and subjecting the yarn while in a heated and tensioned condition to a corona discharge of from 6K volts to 20K volts generated by a direct current voltage applied to an upper grid member and a lower grid member.

4,623,439

THIN FILM OF NI-CO-FE TERNARY ALLOY AND PROCESS FOR PRODUCING THE SAME

Katsuya Mitsuoka, Hitachi; Shinji Narishige, Mito; Akira Kumagai, Hitachi; Masaaki Sano, Hitachi; Shinichi Hara, Hitachi, and Masanobu Hanazono, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 5, 1984, Ser. No. 658,161
Claims priority, application Japan, Oct. 7, 1983, 58-188862
Int. Cl.[4] C23C *14/00*
U.S. Cl. 204—192.2 3 Claims

1. A process for producing a thin film of Ni-Co-Fe ternary alloy containing at most 75% by weight of Ni, 10 to 90% by weight of Co, and at most 15% by weight of Fe comprising,

a step of depositing the ternary alloy on a substrate; and a step of alternately applying a first external magnetic field with a predetermined strength and a second external magnetic field with a predetermined strength over the deposition surface of the substrate at a predetermined frequency during the deposition of the alloy, the first and second external magnetic fields being on a same plane parallel to the deposition surface of the substrate and crossing each other in right angle.

4,623,440

ELECTRODE FOR USE IN ELECTROLYTIC CELL

John F. Cairns, Cheshire, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Jul. 30, 1985, Ser. No. 760,413
Claims priority, application United Kingdom, Aug. 16, 1984, 8420873
Int. Cl.[4] C25B *15/00, 11/03, 11/10*; G01N *27/30*
U.S. Cl. 204—231 21 Claims

1. An electrode, for use in an electrolytic cell, which electrode is associated with a reference electrode adjacent to a surface of said first-mentioned electrode, characterised in that said first-mentioned electrode comprises at least two spaced apart members, at least one of which is foraminate and which comprises an operative electrode surface, and in that the reference electrode is in the form of a strip, plate or rod and is positioned between and spaced from said members.

4,623,441

PAIRED ELECTRODES FOR PLASMA CHAMBERS

Fazal A. Fazlin, St. Petersburg, Fla., assignor to Advanced Plasma Systems Inc., St. Petersburg, Fla.

Filed Aug. 15, 1984, Ser. No. 641,164
Int. Cl.[4] C23C *15/00*; C23F *1/00*
U.S. Cl. 204—298 9 Claims

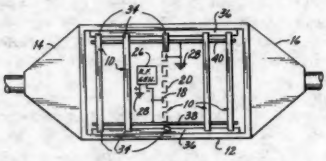
1. An electrode pair for plasma chambers, comprising in combination:

a plurality of power electrode members;

a plurality of ground electrode members;

each said electrode members comprising an angle cross-sectional configuration having a wider side portion and a narrower side portion connected along their length in a substantially right angle relationship;

means for positioning said power electrode members in facing relationship with said ground electrode members with said wider side portions of said power electrode members forming one surface of the electrode pair and the wider portions of the ground electrode members forming the other surface of the electrode pair such that an edge of



the respective said wider side portions of adjacent said electrode members overlap one another, said positioning means comprising a plurality of electrically insulative stand-offs fastened to said overlapping edges of the respective said wider side portions of said electrode members;

means for supplying electrical energy to each of said power electrode members; and

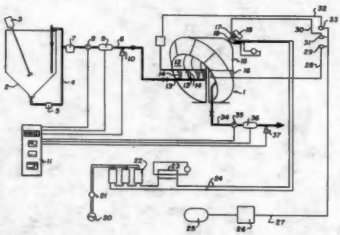
means for connecting each said ground electrode member to the ground of the plasma chamber.

4,623,442

APPARATUS FOR CONTINUOUSLY SEPARATING PARTICULATE SOLIDS FROM LIQUID SUSPENSIONS

Robert A. Ritter, Calgary, Canada, assignor to Alberta Oil Sands Technology and Research Authority, Edmonton, Canada

Filed Sep. 26, 1985, Ser. No. 780,399
Int. Cl.[4] B01D *13/02*
U.S. Cl. 204—300 EC **9 Claims**



1. Apparatus for recovering particulate solids from a liquid suspension thereof, comprising:

a conical shell;

means for rotatably supporting the shell in a tilted position with its apical axis being upwardly inclined;

means for rotating the shell about its apical axis;

a plurality of truncated conical bands having their base ends attached in spaced apart relation to the inner surface of the shell, said bands being progressively smaller from the base end of the shell toward its apex end;

said shell and bands combining to form a rotatable unit;

means for containing the suspension to be treated, the lower end of said rotatable unit extending down into the containment means whereby the bands will be partly submerged in said suspension; and

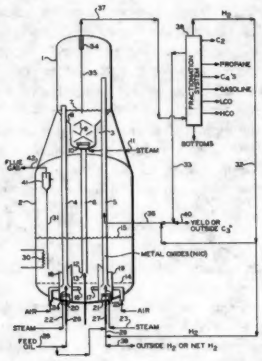
electrode means, associated with the bands, for attracting and collecting solids particles from the suspension to the upper surface of each band.

4,623,443

HYDROCARBON CONVERSION

Stone P. Washer, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 7, 1984, Ser. No. 577,935
Int. Cl.[4] C10G *65/12*
U.S. Cl. 208—67 **18 Claims**



1. A process for hydrogenating an olefin comprising cracking a hydrocarbon with a regenerated metal-coated catalyst under cracking conditions in a cracking zone, transferring said catalyst to a regeneration zone where it is contacted with an oxygen-containing gas and regenerated, continually transferring portions of said regenerated catalyst to said cracking zone while continually transferring other portions to a reduction zone wherein said catalyst is exposed to a reducing gas under conditions to reduce the metals thereon, transferring said cracking hydrocarbons to a separating zone where H_2 and olefins are separated from the rest of the products, contacting at least a portion of said hydrogen and olefins with said thus reduced catalyst in a hydrogenation zone hydrogenating said olefins, transferring the products to said separation zone, and transferring said catalyst to said regeneration zone.

4,623,444

UPGRADING SHALE OIL BY A COMBINATION PROCESS

Stanley C. Che, Los Alamitos, Calif., and Ajay Madgavkar, Katy, Tex., assignors to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Jun. 27, 1985, Ser. No. 749,482
Int. Cl.[4] C10G *7/00, 21/16*
U.S. Cl. 208—92 **43 Claims**

39. A process for upgrading a shale oil feed containing lighter shale oil compounds including lighter shale oil compounds containing nitrogen and heavier shale oil compounds including heavier shale oil compounds containing nitrogen comprising the steps of:

heating the shale oil feed sufficiently to vaporize lighter shale oil compounds;

condensing the vaporized lighter shale oil compounds in a number of consecutively collected fractions;

separately reducing the nitrogen content of each collected fraction by the steps of:

mixing the collected fraction with an extraction agent capable of selectively extracting lighter shale oil compounds containing nitrogen from the collected fraction for a time sufficient to form a nitrogen-rich extract

comprising the extraction agent and vaporized shale oil compounds containing nitrogen and a nitrogen-lean raffinate containing vaporized shale oil compounds; and

separating the raffinate containing vaporized shale oil compounds from the extract comprising vaporized shale oil compounds containing nitrogen;

reducing the nitrogen content of the unvaporized shale oil by the steps of:

mixing the unvaporized shale oil with an extraction agent capable of selectively extracting heavier shale oil compounds containing nitrogen from the unvaporized shale oil compounds for a time sufficient to form a nitrogen-rich extract comprising the extraction agent and unvaporized shale oil compounds containing nitrogen and a nitrogen-lean raffinate containing unvaporized shale oil compounds; and

separating the raffinate containing unvaporized shale oil compounds from the extract comprising unvaporized shale oil compounds containing nitrogen;

hydrotreating the raffinate containing unvaporized shale oil compounds to further reduce its nitrogen content;

combining the raffinates containing vaporized shale oil compounds and the hydrotreated raffinate containing unvaporized shale oil compounds to form a combined nitrogen-lean raffinate.

4,623,445

SODIUM TETRACHLOROALUMINATE CATALYZED PROCESS FOR THE MOLECULAR WEIGHT REDUCTION OF LIQUID HYDROCARBONS

Mark A. Plummer, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Continuation-in-part of Ser. No. 467,698, Feb. 18, 1983, Pat. No. 4,504,378. This application Dec. 4, 1984, Ser. No. 677,960

The portion of the term of this patent subsequent to Mar. 12, 2002, has been disclaimed.

Int. Cl.[4] C10G *11/08, 19/67, 29/12, 47/08*

U.S. Cl. 208—108 **30 Claims**

1. A process for reducing the molecular weight of a high molecular weight hydrocarbon feedstock comprising contacting said feedstock with a molten tetrachloroaluminate catalyst consisting essentially of $NaAlCl_4$, having substantially no excess NaCl or $AlCl_3$, at a pressure above atmospheric and at elevated temperature to produce a liquid product slate wherein said product slate has an average molecular weight substantially lower than the average molecular weight of said feedstock.

4,623,446

CLOSED CYCLONE FCC CATALYST SEPARATION WITH STRIPPING GAS INJECTION AND DIRECT STEAM INJECTION

James H. Haddad, Princeton Junction, and Hartley Owen, Belle Mead, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed May 21, 1984, Ser. No. 612,191

Int. Cl.[4] C10G *11/18;* **F27B** *15/08*

U.S. Cl. 208—113 **3 Claims**

1. A method for the fluid catalytic cracking of a hydrocarbon feed in a closed cyclone system, comprising the steps of:

passing a suspension of said hydrocarbon feed and a catalyst through a riser conversion zone and cracking said hydrocarbon feed in said riser conversion zone thereby producing a mixture comprising said catalyst, unconverted feed and products of conversion, wherein a downstream end of said riser is enclosed by a reactor vessel;

passing said mixture from said riser conversion zone to a riser cyclone separator through a first conduit;

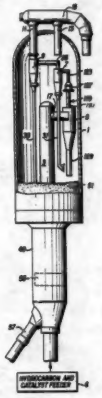
separating a portion of said catalyst from said mixture in said riser cyclone separator by passing said mixture in said riser cyclone in downward spiral flow along an inside wall of a cylindrical chamber of said riser cyclone, said separated portion of catalyst passing from said cylindrical chamber into an upstream end of a frusto-conical chamber, said upstream end being attached to said cylindrical chamber;

passing said separated portion of catalyst to a downstream end of said frusto-conical chamber, said downstream end of said chamber having a narrower inside diameter than said upstream end;

passing said separated catalyst downwardly into a dipleg attached to said downstream end;

passing a gaseous effluent from said riser cyclone separator directly to a primary cyclone separator through a second conduit;

passing said separated catalyst from said riser cyclone separator and primary cyclone separator to a catalyst stripping zone located within said reactor vessel to remove hydrocarbons entrained with said catalyst;



passing at least a portion of a stripping gas in said reactor vessel from said catalyst stripping zone into said dipleg of said riser cyclone separator and contacting said stripping gas with said separated portion of catalyst in countercurrent flow in said dipleg;

passing said stripping gas out of said riser cyclone as part of said gaseous effluent through said second conduit directly to said primary cyclone;

passing said cracked hydrocarbons, as an effluent from said primary cyclone separator, to outside said reactor vessel; and

passing said separated catalyst from said stripping zone to a regeneration vessel.

4,623,447

BREAKING MIDDLE PHASE EMULSIONS

Bert H. Clampitt; Asoke K. Deysarkar, both of Katy, and Thomas D. Westmoreland, Jr., Conroe, all of Tex., assignors to Pennzoil Company, Houston, Tex.

Filed Aug. 2, 1985, Ser. No. 761,835

Int. Cl.[4] C10G *33/00;* **B01D** *3/00, 17/04*

U.S. Cl. 208—187 **9 Claims**

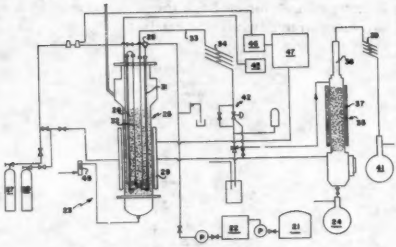
1. A method for the separation and recovery of the water, oil and surfactants contained in a middle phase emulsion, which comprises distilling the emulsion under conditions of atmospheric distillation to separate the water from a residue comprising the oil and surfactant, and thereafter subjecting the residue to vacuum distillation to separate the oil as a distillate and recover the surfactant as the distillation residue.

4,623,448

REMOVING HALOGENATED POLYPHENYL MATERIALS FROM USED OIL PRODUCTS

John P. O'Connell, Oakbrook, and John F. Wozniak, Orland Park, both of Ill., assignors to Moreco Energy, Inc., McCook, Ill.

Filed Mar. 12, 1985, Ser. No. 710,843
Int. Cl.[4] C10G *17/00*
U.S. Cl. 208—262 20 Claims



1. A process for removing polyhalogenated polyphenyl materials from used oil supplies, comprising:

flowing a supply of used oil stock that has been rerefined and that is contaminated with halogenated polyphenyl materials;

blending said flowing supply of rerefined and contaminated used oil stock with a source of hydrogen gas that is at a pressure greater than atmospheric pressure in order to form a flowing blend of hydrogen gas and used oil stock;

moving said flowing blend of hydrogen gas and used oil stock through a guard reactor including a material for absorbing catalyst-fouling impurities from the flowing used oil stock, said moving step being prior to a step of passing the flowing blend of hydrogen gas and used oil stock through a catalyst bed; and

passing said flowing blend of hydrogen gas and used oil stock through the catalyst bed in order to promote a chemical reaction that dehalogenates said halogenated polyphenyl material within said used oil stock into reaction products including a hydrogen halide and polynuclear aromatic material.

18. An apparatus for removing halogenated polyphenyl materials from used oil products, comprising:

means for flowing a supply of rerefined used oil stock that is contaminated with halogenated polyphenyl material;

means for injecting pressurized hydrogen gas into the flow of rerefined and contaminated oil stock and for flowing the resultant hydrogen gas and oil stock blend under pressure;

a reactor assembly downstream of said injecting means, said reactor assembly including a guard reactor and a catalyst bed, said guard reactor having a material for absorbing catalyst-fouling materials from the flowing used oil stock, said guard reactor being upstream of said catalyst bed of material that promotes reaction between the hydrogen gas and the halogenated polyphenyl materials within the used oil stock; and

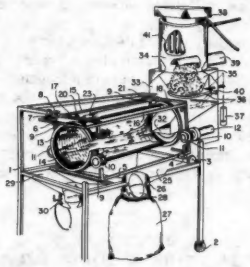
a stripping column downstream of said reactor assembly, said stripping column being capable of removing volatile components from the decontaminated used oil stock.

4,623,449

APPARATUS FOR THE SEPARATION OF THE REUSABLE PART FROM THE UNUSABLE PART OF GRANULAR FORM FILTER MATERIAL, IN PARTICULAR OF GRANULAR FORM ACTIVATED CHARCOAL, FROM FILTER EQUIPMENT

Franz Böhnensieker, Vom Stein-Strasse 27, D-4834 Harsewinkel, Fed. Rep. of Germany

Filed Mar. 22, 1984, Ser. No. 592,093
Claims priority, application Fed. Rep. of Germany, Apr. 8, 1983, 3312612
Int. Cl.[4] B07B *1/22*
U.S. Cl. 209—250 4 Claims



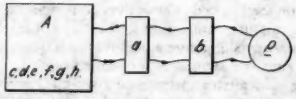
1. An apparatus for separating the reusable part from the unusable part of granular filter material of a filter equipment, particularly granular activated charcoal, comprising a sieve drum rotatably mounted on a frame, means for adjusting said sieve drum in its longitudinal inclination, means for driving the sieve drum with adjustable rotary speed, and means for pneumatically withdrawing the granular filter material from the filter equipment and for supplying the granular filter material to the sieve drum, said withdrawing and supplying means comprising suction container means mounted on said frame having an inlet opening communicating with the filter equipment for receiving the granular filter material therefrom and an outlet communicating with the sieve drum, a pressure reduction pump mounted on said suction container for producing a negative pressure in the suction container, and means for closing and opening the outlet opening in a controlled periodic manner and for creating a periodic suction force on the inlet opening during the time the outlet opening is closed for adjusting the amount of filter material fed to the sieve drum per unit time.

4,623,450

ARTIFICIAL KIDNEY

Georges Vantard, Champs sur Marne; Gilbert Clement, Bonville, and Jean-Pierre Vasseur, Longjumeau, all of France, assignors to Hospal Industrie, Meyzieu, France

Continuation of Ser. No. 387,225, Jun. 10, 1982, abandoned.
This application Aug. 6, 1985, Ser. No. 763,060
Claims priority, application France, Jun. 16, 1981, 81 11985
Int. Cl.[4] B01D *13/00*
U.S. Cl. 210—87 7 Claims



1. In an artificial kidney comprising, in combination, the following elements:

(a) a haemodialyzer including:

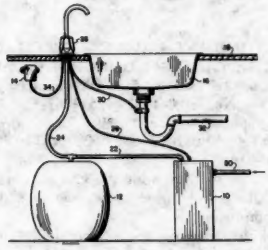
(i) a membrane which is capable of permitting the treatment of blood, particularly by dialysis and by ultrafiltration, said membrane dividing the haemodialyzer into first and second compartments;
(ii) means for feeding blood to and from the first compartment; and
(iii) means for feeding the dialysis liquid to and from the second compartment;
(b) an extracorporal blood circuit through which the blood passes outside the haemodialyser from the patient to the blood feeding means of the haemodialyzer;
(c) means for preparing the dialysis liquid, ready for circulation into a dialysis liquid circuit through said second compartment;
(d) means for causing the dialysis liquid to circulate through said second compartment into said dialysis liquid circuit;
(e) means for regulating the pressure of the dialysis liquid in said haemodialyzer;
(f) storage means for storing the fresh and/or used dialysis liquid
(g) means for removing and measuring amounts of dialysis liquid equal to the desired amounts of ultrafiltrate and
(h) means for controlling and checking, in particular, the elements (b) and (d),
the improvement comprising,
two independent flexible elements of generally thin planar shape, provided with apertures for liquids, and located on opposite parts of the haemodialyzer,
at least one rigid or semi-rigid multifunctional element provided with apertures for liquids, located internally between the flexible elements, in association with the haemodialyzer,
two other rigid or semi-rigid multifunctional elements, one of which is located external of each of the flexible elements,
the rigid or semi-rigid multifunctional elements contain within themselves the extracorporal blood circuit and the dialysis liquid circuit, the flexible elements performing all sealing functions.

4,623,451

THIRD FAUCET SYSTEM WITH ABOVE SINK PURITY INDICATOR

Bruce J. Oliver, 902 Tam O'Shanter, Las Vegas, Nev. 89109

Filed Feb. 19, 1985, Ser. No. 703,137
Int. Cl.[4] C02F *1/44*
U.S. Cl. 210—87 **16 Claims**



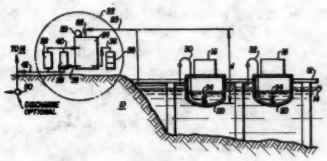
1. A drinking water delivery system for connection to a purification apparatus that receives water from a source and treats the water to remove an amount of unwanted substances from the water, comprising:
faucet means adapted for connection to the purification apparatus and having means manually operable from an OFF condition to an ON condition for dispensing the treated water, including means for providing a visual or audible signal to a person when energized, a switch actuated in response to the ON condition, a pair of electrodes, and means for mounting the electrodes for contacting the treated water; and
circuit means connecting the switch, the electrodes and the signal providing means for charging the electrodes to thereby determine a level or purity of the treated water being dispensed only during the ON condition, and for thereafter energizing the signal providing means only when the treated water has a level of purity above or below a predetermined target purity level.

4,623,452

DOCKSIDE SYSTEM FOR THE COLLECTION AND DISPOSAL OF BILGE WATER AND WASTE OIL

Robert N. Petersen, 2025 Joliet Ct., Virginia Beach, Va. 23456

Filed Sep. 17, 1985, Ser. No. 777,047
Int. Cl.[4] B01D *21/02, 21/30*
U.S. Cl. 210—104 **16 Claims**



1. A waterborne vessel waste-liquid evacuator system to be mounted at a single facility for individually evacuating a plurality of vessels brought adjacent thereto, said system comprising a means for evacuating bilges and the like of said vessels positioned at points adjacent to said single facility by inserting the end of a tube into waste liquid of said vessels, whereupon the waste liquid therefrom is automatically transferred and deposited into a vacuum-tank means of said waste-liquid evacuator system and thereafter automatically separated into oil and water and respectively transferred to oil and water receiving means, said means for evacuating being further defined by and/or including:
said vacuum-tank means providing a closed reservoir having a waste liquid inlet and an air evacuation outlet located near the top of said vacuum tank means, a water outlet located near the bottom of said vacuum tank means and an oil outlet located a relatively small distance above said water outlet, but a relatively great distance below said air-evacuation outlet;
said tube being attached to said vacuum tank means at said waste liquid inlet for extending into the waste liquid of vessels floating near said single facility;
a vacuum producing means coupled to said vacuum tank means at said air-evacuation outlet for evacuating air therethrough from said vacuum-tank means to cause a continuous vacuum in said vacuum-tank means and thereby to cause waste liqiud to be sucked through said hose into said vacuum tank means at said waste liquid inlet;
said water receiving means being coupled to said vacuum-tank means at said water outlet for receiving water separated from said vessel waste liquid in said vacuum tank means, said water receiving means including a water-flow control means for controlling the flow of water from said vacuum-tank means to said water receiving means;
said oil receiving means being coupled to said vacuum-tank means at said oil outlet for receiving oil separated from said vessel waste liquid in said vacuum tank means, said oil receiving means including an oil-flow control means for controlling the flow of oil from said vacuum-tank means to said oil receiving means; and
a control system comprising an upper liquid-level sensor in said vacuum-tank means positioned substantially above said water and oil outlets and being coupled to an oil/water interface sensing means for enabling said oil/water

interface sensing means when the level of waste liquid in said vacuum-tank means rises to a level substantially above said water and oil outlets, said oil/water interface sensing means being positioned inside said vacuum-tank means vertically between said water outlet means and said oil outlet means and being coupled to said water-flow control means and said oil-flow control means for, when enabled, only providing flow of water from said vacuum-tank means through said water outlet to said water receiving means in response to not sensing an oil/water interface intermediate said water and oil outlets and for only providing flow of oil from said vacuum-tank through said oil outlet to said oil receiving means in response to sensing an oil/water interface intermediate said water and oil outlets; and, said control system further comprising a lower liquid level sensor in said vacuum-tank means positioned below said upper liquid level sensor but above said water and oil outlets and being coupled to said interface sensing means for disabling said interface sensing means and for causing the cut off of flow of oil and water from said vacuum-tank means through said oil and water outlets to said oil and water receiving means when the level of waste liquid in said vacuum-tank means fails to said level at said lower liquid level sensor;

whereby the operators of vessels desiring to have their bilges and the like evacuated can moor at points adjacent to said single facility and insert the end of said tube into the waste liquid of their vessels, whereupon the waste liquid therefrom will be automatically transferred and deposited into the vacuum-tank means and thereafter automatically separated into oil and water and respectively transferred to said oil and water receiving means.

4,623,453

FILTER PRESS AND SEPARATOR MECHANISM

James H. Davenport, Stoke-on-Trent, England, assignor to Eurotechnik (U. K.) Limited, England

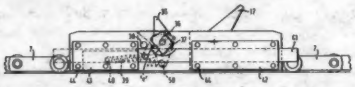
PCT No. PCT/GB83/00281, § 371 Date Jun. 28, 1984, § 102(e) Date Jun. 28, 1984, PCT Pub. No. WO84/01725, PCT Pub. Date May 10, 1984

PCT Filed Nov. 1, 1983, Ser. No. 629,840

Claims priority, application United Kingdom, Nov. 1, 1982, 8231212

Int. Cl.⁴ B01D *25/15*

U.S. Cl. 210—143 **9 Claims**



1. A filter press comprising a set of press plates mounted for movement along a track, the track being longer than the set of press plates, and including a plate separator mechanism and means for reciprocating the mechanism repeatedly to separate a single press plate from the set and move it along the track, said mechanism including a rigid carriage mounted for reciprocation along the track; a pair of engagement members mounted separately and independently on the carriage and each capable of engaging a press plate to cause or prevent movement thereof, the engagement members being biasable towards a spaced apart position in which two press plates so engaged are separated from one another, and the engagement members being movable towards one another to enable each of them to engage a respective press plate of a pair of non-separate adjacent press plates, and the carriage including spring means biasing the engagement members apart said engagement members including engagement dogs both rotatably mounted on the carriage, one being mounted on a spring-loaded member laterally movable relative to the other in the direction of movement of the carriage,.

4,623,454

MASS TRANSFER COLUMN

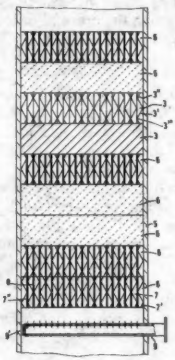
Willy Tauscher; Felix Streiff, both of Winterthur, and Peter Mathys, Neuhausen, all of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Dec. 4, 1984, Ser. No. 677,864

Claims priority, application Switzerland, Dec. 15, 1983, 6679/83; Jul. 19, 1984, 3503/84

Int. Cl.⁴ C02F *3/00*

U.S. Cl. 210—150 **15 Claims**



1. A mass transfer column comprising

a plurality of vertically stacked packing elements disposed along a vertical axis;

some of said packing elements including a plurality of vertically disposed corrugated layers and vertically disposed plane intermediate layers, said intermediate layers each having a size at most equal to the size of said corrugated layers; and

each of the remainder of said packing elements including a plurality of contacting layers, at least most of said contacting layers having corrugations defining flow channels and being inclined to said vertical axis and in criss-crossing relation to an adjacent layer.

4,623,455

METHOD AND DEVICE FOR FILTERING LUBRICATING OIL FOR A DOUGH DIVIDER MACHINE

D L Adcock, 6412 S. Douglas Ave., Oklahoma City, Okla. 73139

Division of Ser. No. 498,064, May 25, 1983, Pat. No. 4,513,614. This application Mar. 25, 1985, Ser. No. 715,629

Int. Cl.⁴ B01D *23/04, 29/32;* **A47J** *37/12*

U.S. Cl. 210—168 **3 Claims**

1. A device for filtering flour, dough and contaminants from mineral oil of the type used in lubricating a dough divider machine, comprising:

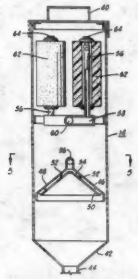
a first tank for receiving mixed mineral oil, flour, dough and contaminants captured from said dough divider machine, said tank having an upper opening to receive said mineral oil, flour, dough and contaminants as they are poured into said first tank;

a first filtration surface disposed across said upper opening such that mixed mineral oil, flour, dough and contaminants are poured through said upper opening gravity filtration through said first filtration surface reduces the particle size in said mineral oil to the range of less than 50–200 microns;

a second tank;

a diffuser disposed in a lower portion of said second tank for coalescing flour, dough and contaminants in mineral oil passing there through, said diffuser comprising a pyramid-shaped conduit which conveys fluid from a relatively narrow peak of said pyramid-shaped conduit to a relatively broad base of said pyramid-shaped conduit;

a filter section including a second filter surface disposed in an upper portion of said second tank for receiving mineral oil from said diffuser such that the particle size of flour,



dough and contaminants in mineral oil passing therethrough is reduced to the range of 10 microns or less;

a first conduit connected to convey mineral oil from said first tank to said diffuser in said second tank;

a suction pump connected to said filter section of said second tank such that mineral oil is drawn from said first tank through said first conduit, said diffuser, said filter section, and said suction pump; and,

a third tank connected for receiving mineral oil from said suction pump.

4,623,456

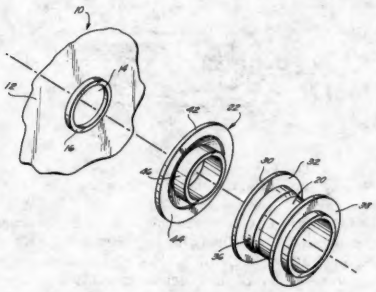
SELF-SEALING NECK FOR FILTER

Michael Ratner, 67-33 170th St., Flushing, N.Y. 11365, assignor to Michael Ratner, Flushing, N.Y.

Filed Oct. 28, 1985, Ser. No. 792,142

Int. Cl.[4] B01D *35/00*

U.S. Cl. 210—168 **7 Claims**



1. In combination with an oil filter having a filter body provided with an opening and with a collar surrounding said opening, a self-sealing neck comprising means for providing substantially universal frictional sealing between an automotive oil filter and an automatic transmission, said neck including a coupling having a gasket mounted thereon, said gasket being molded of an elastomer, typically nitrile or polyacrylic rubber, said gasket engaging said filter body and surrounding said collar in a frictional clamping and tight condition, said coupling having a recess in which said gasket fits, said coupling having a flange extending opposite to said recess, and said gasket extending around said flange.

4,623,457

WATER PURIFIER

Heinz Hankammer, Baumgartenstrasse 51, 6204 Taunusstein 4, Fed. Rep. of Germany

Filed Apr. 12, 1985, Ser. No. 722,792

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1984, 3413948

Int. Cl.[4] B01D *35/00*

U.S. Cl. 210—237 **10 Claims**

1. A water purifier comprising:

(a) a collecting container having a handle and an outwardly extended pouring spout positioned substantially opposite said handle, the top portion of said container tapering outward from the bottom portion;

(b) a removable funnel receivably fitted within at least a portion of the top of said collecting container;

(c) the outer contour of the lower portion of said funnel substantially matching the inner contour of the upper portion of said collecting container;

(d) said funnel angularly fitting within said collecting container so that the portion of the funnel wall closest to the pouring spout extends higher than the portion of the funnel wall closest to said handle;

(e) said funnel having an offset opening in the bottom thereof to receive a filter cartridge, said opening positioned closer to said handle than to said pouring spout to provide a favorable distribution of weight when a filter cartridge is positioned in the bottom of said funnel;

(f) a removable cover fitted atop said funnel to provide a means for easy opening and filling of said container; and

(g) a pouring passage connecting the internal bottom portion of said collecting container with said pouring spout to provide a means for convenient emptying of said container.

4,623,458

QUICK RELEASE EXPENDABLE APEX APPARATUS WITH BONDED LINER

Gordon R. Hakola, 7551 N. Palm Cir., Tucson, Ariz. 85704

Continuation-in-part of Ser. No. 515,282, Jul. 19, 1983, Pat. No. 4,541,934. This application Apr. 8, 1985, Ser. No. 721,076

The portion of the term of this patent subsequent to Sep. 17, 2002, has been disclaimed.

Int. Cl.[4] B01D *45/12*

U.S. Cl. 210—238 **10 Claims**

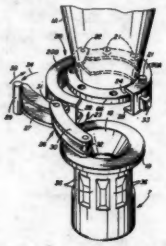
1. A quick release apex apparatus for a cyclone, said quick release apex apparatus comprising in combination:

(a) a split ring clamp having a first semicircular ring section and also having a second semicircular ring section and means for rigidly connecting said second semicircular ring section in fixed relationship to a flange of a cone of said cyclone, said first and second semicircular ring sections

each having a first end and a second end, said first end of said first semicircular ring section being pivotally connected to said first end of said second semicircular ring section;

(b) quick release means having a handle that is easily actuatable by a first hand of an operator for drawing said second end of said second semicircular ring section toward said second end of said first semicircular ring section and locking said second end of said first semicircular ring section tightly to said second end of said second semicircular ring section and for releasing said second end of said first semicircular ring section from said second end of said second semicircular ring section;

(c) a plastic apex housing including an upper integral flange having a sloped lower surface attached to the top of said apex housing, said split ring clamp engaging said sloped



lower surface of said flange of said plastic apex housing to draw an upper surface of said flange of said plastic apex housing tightly against a lower surface of said flange of said cone as said quick release means is actuated to its locked position, wherein an operator can use a first hand ot either lock or release said quick release apex to said cone while simulataneously using a second hand to maintain said plastic apex housing in alignment with said cone; and

(d) an abrasion resistant apex liner and bonding means for chemically bonding an outer wall surface of said abrasion resistant apex liner to an inner wall surface of said plastic apex housing, said abrasion resistant apex liner having much more resistance to abrasion than said plastic apex housing, whereby the efficiency of said cyclone remains relatively constant due to the low rate of abrasion of said abrasion resistant apex liner.

4,623,459

APPARATUS FOR SELECTIVELY TAKING UP A LAYER OF POLLUTANT FROM THE SURFACE OF A BODY OF WATER

Henry Benaroya, 41, boulevard du Commandant Charcot, F-92200 Neuilly sur Seine; Jean Le Foll, 14, avenue de l'Europe, F-78160 Marly le Roi, and Jean-Elie Cadoux, Le Mesnil Hubert en Exmes, F-61230 Gace, all of France

Continuation-in-part of Ser. No. 521,760, Nov. 23, 1982, Pat. No. 4,491,518. This application Aug. 31, 1984, Ser. No. 646,246

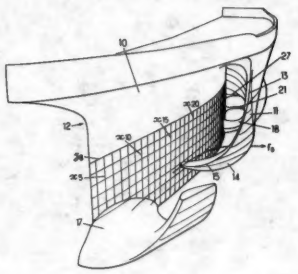
Claims priority, application France, Nov. 23, 1981, 81 21905; Dec. 18, 1981, 81 23741; Sep. 1, 1983, 83 14051

The portion of the term of this patent subsequent to Jan. 1, 2002, has been disclaimed.

Int. Cl.[4] E02B *15/04*

U.S. Cl. 210—242.3 **11 Claims**

1. An apparatus for selectively skimming a layer of pollutant from the surface of a body of water, comprising: a hull provided with means for moving it in a predetermined direction through the body of water and having two lateral parts and a vertical central part, placed between the lateral parts, projecting forwards with respect to stems of the lateral parts in said predetermined direction and defining channels directing a flow of water and pollutant to separator means in said hull, said central part bearing first immersed deflector means shaped for creating vortices in said water body whose angular position decreases divergence of the flow lines in the vicinity of free water level around the hull, wherein each lateral part cooperates with the central part to define an open bottom channel for trapping of water and wherein a front end portion of each



lateral part is connected to an immersed part of the central part which is located forward of the stem of the associated lateral part by vane means constituting additional immersed deflector means arranged for deflecting the flow lines of deeper layers in said channel downwardly and outwardly away from said central part, thereby causing part of the trapped water to escape from said channel under and across a front portion of said lateral part.

4,623,460

FLUID SEPARATION ELEMENT

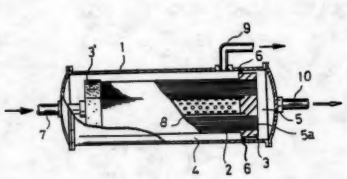
Hideshi Kuzumoto; Tetsuo Ukai, both of Otsu, and Akira Uejima, Yamatotakada, all of Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 283,697, Jul. 15, 1981, abandoned. This application Jun. 12, 1984, Ser. No. 619,953

Claims priority, application Japan, Jul. 15, 1980, 55-97057

Int. Cl.[4] B01D *13/00*

U.S. Cl. 210—321.1 **2 Claims**



1. A fluid separation element, comprising:

a casing;

a bundle of selectively permeable hollow fibers accommodated therein, said fibers having been dried with hot air having a temperature of 90° to 100° C. and an amount of 2.5 to 10 m^3/m^2 of the outer surface of the hollow fiber; and

a resinous potting agent for potting the end portions of the fibers and blocking the gaps among the fibers, wherein:

the ratio of the porosity of the membrane of the hollow fiber at the effective permeation portion (HA) and the porosity of the membrane of the hollow fiber at the potting portion (HB) satisfies the following condition:

$$0.9 \geqq HB/HA \geqq 0.4;$$

and

the outer diameter of the hollow fiber at the effective permeated portion (OD_A) and the outer diameter of the hollow fiber at the potting portion (OD_B) satisfies the following condition:

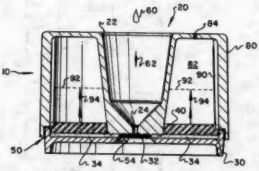
$0.95 \geqq OD_B/OD_A \geqq 0.7$.

4,623,461

TRANSVERSE FLOW DIAGNOSTIC DEVICE

Miles G. Hossom, Duluth, Ga., and Dinesh A. Jacob, Girton, United Kingdom, assignors to Murex Corporation, Norcross, Ga.

Filed May 31, 1985, Ser. No. 740,100
Int. Cl.[4] B01D *29/04*
U.S. Cl. 210—445 **41 Claims**



24. A device comprising: means for testing for the presence of an analyte in a liquid including:

a. a liquid input means having an upper receiving inlet and a lower discharge aperture smaller than said receiving inlet;

b. filter means positioned below said liquid input means and having at least one reaction zone and having at least one peripheral zone integrally formed of a substantially planar porous material having upper and lower faces which porous material is capable of drawing liquid through its pores by capillary action so that liquid discharged into said reaction zone is drawn into said peripheral zone;

c. an absorbent skirt in contact with only said peripheral zone of said planar porous material, said porous material entirely surrounding said reaction zone so that liquid drawn from said reaction zone into said peripheral zone is absorbed by said absorbent skirt;

d. closure means connected to said liquid input means and contacting said lower face of said reaction zone for holding said upper face of said reaction zone in alignment for fluid flow communication with said discharge aperture, said closure means having a viewing port therein for viewing at least a portion of said lower face of said reaction zone;

e. a substantially liquid impermeable shield means positioned adjacent said liquid discharge aperture for abutting against said upper face of said reaction zone means and for separating said absorbent skirt from said discharge aperture so that liquid from said aperture passes outwardly through at least a portion of said reaction zone; and

f. a casing means attached to said input means receiving inlet and connected to said closure means for encasing said test device so that said test device can be manipulated for observing said reaction zone through either said viewing port or said input means without contacting said absorbent skirt or said filter means.

4,623,462

OIL FILTERS USING WATER-BASED LATEX BINDERS

Elmer R. Urig, Avon Lake, and James E. Park, Lorain, both of Ohio, assignors to The BF Goodrich Company, Akron, Ohio

Filed Oct. 29, 1984, Ser. No. 665,478
Int. Cl.[4] B01D *39/18*
U.S. Cl. 210—496 **13 Claims**

1. An oil filter comprising a filter substrate impregnated with a cured binder, said substrate being resistant to hot oil at 177° C. when immersed therein for 96 hours, said binder comprising a water-based latex selected from the group consisting of insoluble homopolymers of vinyl halide or vinylidene halide and insoluble copolymers of vinyl halide and/or vinylidene halide with one or more of copolymerizable monomers having a latex solids concentration of about 5 to 70% by weight, 1 to 30 weight parts per 100 weight parts of latex solids of cross-linking resin, and 1 to 30% by weight of said cross-linking resin of a catalyst for promoting the cross-linking of said latex; said copolymers contain at least 20% by weight of latex solids of a polymerized vinyl halide; said substrate is selected from filter paper and nonwoven fibers; and said cross-linking resin is selected from epoxy resins, melamine-formaldehyde resins, malamine resins, phenol-formaldehyde resins, polyacrylate resins, and mixtures thereof.

4,623,463

FORMATION OF POROUS MEMBRANES

Douglas L. Ford, Eastwood, Australia; Clinton V. Kopp, Barrington, Ill., and Eric W. Anderson, Neutral Bay, Australia, assignors to Memtec Limited, Parramatta, Australia

PCT No. PCT/AU84/00081, § 371 Date Jan. 9, 1985, § 102(e) Date Jan. 9, 1985, PCT Pub. No. WO84/04529, PCT Pub. Date Nov. 22, 1984
PCT Filed May 9, 1984, Ser. No. 692,892
Claims priority, application Australia, May 9, 1983, 14358/83
Int. Cl.[4] B29C *39/02*
U.S. Cl. 210—500.29 **17 Claims**

1. A method of preparing a porous membrane which includes the steps of dissolving a single, chemically homologous, hydrolysable thermoplastic material which has both relatively non-crystalline and relatively crystalline portions into a hydrolytic solvent under conditions of temperature and time which cause the relatively non-crystalline portions of the thermoplastic to dissolve while at least a portion of the relatively crystalline portions of said thermoplastic material do not dissolve, but form a collidal dispersion in said solvent;

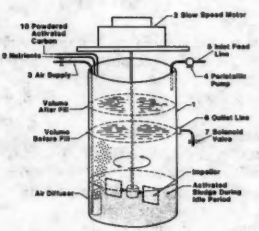
forming said colloidal dispersion and solvent into a film, and thereafter causing immersion precipitation of the dissolved thermoplastic portions in the said film, to form a porous membrane in which the colloidal, relatively crystalline portions are joined together in the membrane by the precipitated relatively non-crystalline portions, with pores in the membrane being defined by spaces between said relatively crystalline portions.

4,623,464

REMOVAL OF DIOXINS, PCB'S AND OTHER HALOGENATED ORGANIC COMPOUNDS FROM WASTEWATER

Wei-chi Ying, Grand Island, and Stanley A. Sojka, Buffalo, both of N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Mar. 21, 1985, Ser. No. 714,436
Int. Cl.[4] C02F *3/08*
U.S. Cl. 210—616 **5 Claims**



1. The combination of physicochemical and biological treat-

ment processes for removing dioxins, PCB's, and other halogenated organic compounds from raw wastewater, in a pretreatment zone to produce pretreated wastewater still containing minor proportions, of dioxins and PCB's and then in a reaction zone wherein final effluent is produced which comprises the physiocochemical process consisting of subjecting the raw wastewater to simultaneous neutralization and oxidation, followed by separating precipitated products, which precipitated products have adsorbed a major proportion of at least 90% of the dioxins and PCB's present in the raw wastewater in the same pretreatment zone, and then followed by biological treatment process consisting of subjecting the pre-treated wastewater, which contains the minor proportion of dioxins and PCB's, and other halogenated organic compounds in raw wastewater, to a combined powdered active carbon adsorption and biological treatment process in a sequencing batch reactor in the presence of acclimated activated sludge which comprises the steps FILL, REACT, SETTLE, DRAW, and IDLE, said combined treatment process operating at a mixed liquor suspended solids concentration in excess of 5000 mg/L, and wherein the amount of powdered active carbon is added during the FILL and/or REACT steps and is sufficient to produce a final effluent free of dioxins and PCB's, containing less than 0.8 ppt and less than 2.0 ppb, respectively, and substantially free of other halogenated organic compounds, and disposing of waste sludge in a secure landfill.

4,623,465

REMOVAL OF COMBINED ORGANIC SUBSTANCES FROM AQUEOUS SOLUTIONS

Alexander M. Klibanov, Boston, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 255,880, Apr. 20, 1981, abandoned. This application Oct. 29, 1985, Ser. No. 793,484

Int. Cl.[4] C02F *1/54*

U.S. Cl. 210—632 **11 Claims**

1. A process for removing a first aromatic organic compound from an aqueous solution, comprising the following steps:

a. adding a second aromatic organic compound to said aqueous solution, said second aromatic organic compound comprising a hydroxy- or amine-substituted aromatic compound;

b. adding an enzyme to said aqueous solution;

c. adding a substrate for said enzyme to said aqueous solution;

d. allowing sufficient time for said first and second organic compounds to form a precipitate; and,

e. removing said precipitate from said aqueous solution.

4,623,466

METHOD AND APPARATUS FOR THE COUNTER-CURRENT MASS EXCHANGE BETWEEN TWO PHASES HAVING DIFFERENT DENSITIES

Vincent Savall, Velizy, France, assignor to Degremont, Rueil-Malmaison, France

Filed Mar. 11, 1982, Ser. No. 357,316

Claims priority, application France, Mar. 24, 1981, 81 05813

Int. Cl.[4] B01D *15/02*

U.S. Cl. 210—634 **14 Claims**

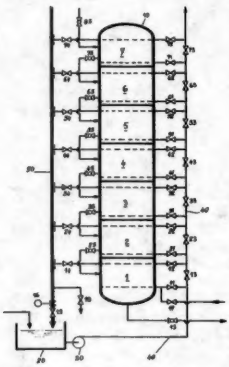
1. A method for the counter-current mass exchange between first and second non-miscible phases have different densities, said method comprising the steps of:

(a) providing a vertical tower having opposite vertically spaced ends and defining a plurality of separate superposed chambers;

(b) continuously circulating said first phase, serially in a first direction from a first end of said tower to a second end of said tower, through all of said chambers except first and second adjacent said chambers;

(c) discontinuously circulating said second phase, serially in a second direction opposite to said first direction and from said second end of said tower to said first end of said tower, through all of said chambers except said first chamber of said adjacent chambers closest to said first end of said tower, whereby said first chamber is free of both said first phase and said second phase, said discontinuous circulation comprising;

(d) diverting a small portion of said first phase from said serial circulation thereof and introducing said small portion into said second chamber of said adjacent chambers closest to said second end of said tower, and by said small portion of said first phase carrying away said second phase in said second chamber from said second chamber and transferring it in said second direction to said first chamber, whereby said second chamber then is free of both said first phase and said second phase;



(e) reintroducing said small portion of said first phase into the supply of said first phase to thereby again be continuously circulated in said first direction;

(f) adjusting said serial continuous circulation of said first phase to be through all of said chambers except said second chamber and a third chamber adjacent said second chamber in said first direction toward said second end of said tower;

(g) periodically repeating said steps (d) through (f) to sequentially and discontinuously transfer said second phase in said second direction through said chambers;

(h) periodically discharging said second phase from the endmost said chamber at said first end of said tower; and

(i) continuously discharging said first phase from a said chamber adjacent said second end of said tower.

4,623,467

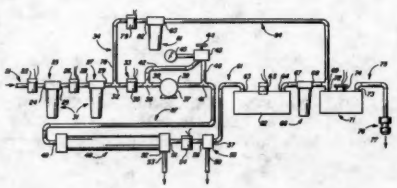
WATER PURIFYING AND VENDING APPARATUS

Jerry J. Hamlin, Mesa, Ariz., assignor to International Manufacturing and Water Vending Company, Mesa, Ariz.

Filed Jun. 25, 1984, Ser. No. 623,918

Int. Cl.[4] B01D *13/00, 31/00*

U.S. Cl. 210—652 **6 Claims**



3. A method of producing purified water from a source of

conventional tap water and vending a predetermined amount of purified water comprising the steps of:

coupling the source of tap water to a prefilter;

prefiltering the water to remove particulates chlorine, organic materials, and the like;

utilizing reverse osmosis to remove substantially all remaining particulates, contaminates, and the like to output substantially purified water and to discharge waste water to a temporary sump;

temporarily storing the purified water in a holding tank;

afterfiltering the partially purified water to remove any remaining contaminates including chlorine, low molecular weight organic compounds, and the like;

immersing the afterfilter water in ultraviolet light for killing substantially all micro-organisms and the like to produce purified water;

dispensing said predetermined amount of purified water to a container;

establishing a predetermined cycle time as required for dispensing said predetermined amount of purified water into said container;

initiating the cycle time in response to the deposit of a predetermined value of specie; and

terminating the dispensing of purified water into the container at the end of said timing period thereby measuring said predetermined amount of purified water dispensed;

providing a generally cylindrical housing having a hollow central interior with a longitudinal axis therethrough;

placing a low pressure mercury vapor lamp within said housing interior substantially aligned with said axis;

wrapping the lamp with a layer of relatively thin plastic material for preventing contact with the water and prolonging the life of the lamp;

providing a relatively small annular space between the outer perimeter of the lamp and the inner surface of the housing; and

disinfecting the purified water by flowing it through the annular space and over the lamp to substantially kill all micro-organisms therein prior to the dispensing operation.

4,623,468

METHOD FOR TREATING OIL SLICKS

Andre Lepain, Rosieres, and Robert D. E. M. Bronchart, Brussels, both of Belgium, assignors to Labofina, S.A., Brussels, Belgium

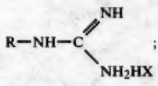
Division of Ser. No. 463,491, Feb. 3, 1983, Pat. No. 4,512,914. This application Mar. 18, 1985, Ser. No. 713,372

The portion of the term of this patent subsequent to Jul. 31, 2001, has been disclaimed.

Int. Cl.[4] C02F *3/00*; B01F *17/16*

U.S. Cl. 210—749 **2 Claims**

1. A method for reducing an oil slick on sea water, comprising applying to the oil slick a dispersing composition comprising a surface-active agent, a solvent, and a monoalkylguanidium salt having the general formula:



where R is an aliphatic hydrocarbon radical containing from about 8 to about 20 carbon atoms, and X is a halogen or an acid anion.

4,623,469

METHOD FOR RENDERING HAZARDOUS WASTES LESS PERMEABLE AND MORE RESISTANT TO LEACHING

Jesse R. Conner, Atlanta, Ga., assignor to Chem-Technics, Inc., Atlanta, Ga.

Continuation-in-part of Ser. No. 532,614, Sep. 15, 1983, abandoned. This application Feb. 26, 1985, Ser. No. 705,667

Int. Cl.[4] C02F *11/14*

U.S. Cl. 210—751 **11 Claims**

1. A method of treating hydrophilic liquid and semi-liquid wastes to render them fit for ultimate disposal in a solid mass, comprising the steps of:

determining the ionic charge of counter ions in the waste;

selecting a suspension of emulsified asphalt particles having an opposite particle charge to the ionic charge of the counter ions;

admixing the selected suspension of emulsified asphalt particles with the waste at ambient temperature in an amount sufficient to neutralize the ionic charge of the asphalt particles and coalesce the admixture into a hydrophobic mass, the final concentration of the suspension of emulsified asphalt particles being between approximately 0.1% and 40% by weight of the waste treated,

whereby the admixture of waste and asphalt is converted into a physically stable hydrophobic solid end product substantially impermeable to water.

4,623,470

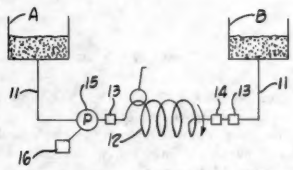
PROCESS AND APPARATUS FOR SEPARATING OR FRACTIONATING FLUID MIXTURES

Robert J. Adler, Cleveland, Ohio, assignor to Helipump, Inc., Cleveland, Ohio

Filed Nov. 9, 1981, Ser. No. 319,132

Int. Cl.[4] B04B *5/00*

U.S. Cl. 210—787 **10 Claims**



1. Apparatus for the removal of fine particles from a slurry of the fine particles suspended in a liquid, comprising in combination a first container adapted to contain said slurry, a second container adapted to contain said slurry, a helical conduit in communication with both of said containers and adapted to provide passage for said slurry between said containers, rotating means for spinning said helical conduit on its axis to impart centrifugal force upon the slurry in said helical coil, seal means associated with said helical conduit to permit said helical conduit to spin while maintaining communication between said containers, pumping means for causing slurry to flow axially in said helical conduit between said containers, and control means for controlling the operation of the pumping means to provide a first period during the spinning of the helical conduit, to provide a second period during the spinning of the helical conduit, and to provide a third period during the spinning of the helical coil, said control means being timed to not have the pumping means operative during the said first period, to cause the pumping means to operate to cause axial flow of the slurry in a first axial direction in the helical coil during the said second period, and to cause the pumping means to cause axial flow of the slurry in an opposite direction during the said third period, said first, second and third periods being repeated cyclically, the cyclic repetition of the first, second, and third

periods in cooperation with continued centrifugal force imparted on the slurry by the spinning helical conduit inducing fines suspended in the slurry to migrate to one of said containers.

4,623,471

AQUEOUS TEXTILE WASHING COMPOSITIONS

Heinz-Manfred Wilsberg, Cologne, Fed. Rep. of Germany, assignor to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Mar. 26, 1985, Ser. No. 716,271

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1984, 3412090

Int. Cl.[4] C11D *1/835, 3/32*

U.S. Cl. 252—8.8 **11 Claims**

1. An aqueous textile washing composition free from anionic surfactants comprising

(a) from about 10 to about 70% by weight of at least one nonionic surfactant which is an adduct of ethylene oxide and/or propylene oxide with fatty alcohols and/or with oxoalcohols;

(b) from about 1 to about 35% by weight of at least one imidazolinium compound which contains 2 long chain (C_{10}–C_{24}) alkyl or alkenyl groups;

(c) from about 0.4 to about 5% by weight of a fatty acid-hydroxyalkyl polyamine condensate which is obtained by the reaction of 1 to 4 mols of fatty acid radicals obtained from either free fatty acids, from their lower alkyl esters, from their acid halides, or from their glycerides, with one mole of hydroxylaklylpolyamine;

(d) from about 1 to about 20% by weight of at least one monohydric or polyhydric alcohol.

4,623,472

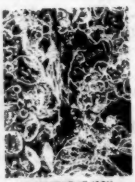
THERMOSET MICROPOROUS POLYMER LUBRICATING COMPOSITION AND METHOD FOR FORMING THE SAME

Warren E. Jamison, Edmonds, Wash.; Dean P. Stull, Longmont, Colo., and Franklin H. Guzzetta, Middletown, Ohio, assignors to Armco, Inc., Middletown, Ohio

Filed Apr. 5, 1985, Ser. No. 720,518

Int. Cl.[4] C10M *149/20*

U.S. Cl. 252—12.2 **30 Claims**



1. A thermoset microporous polymer lubricating composition, comprising:

a lubricating oil; and

a thermosetting polymer formed into a matrix having interconnected microscopic pores to receive said lubricating oil during formation of said matrix and with said matrix having sufficient structural integrity to thereafter retain said lubricating oil and to release said retained lubricating oil from said matrix during subsequent use of said composition for lubricating elements external to said matrix.

4,623,473

SULFUR-CONTAINING COMPOSITIONS, AND ADDITIVE CONCENTRATES AND LUBRICATING OILS CONTAINING SAME

Kirk E. Davis, and Stephen A. DiBiase, both of Euclid, Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Filed Jan. 31, 1985, Ser. No. 696,840

The portion of the term of this patent subsequent to Sep. 16, 2003, has been disclaimed.

Int. Cl.[4] C10M *135/18, 135/04*

U.S. Cl. 252—33.6 **16 Claims**

1. A lubricating oil composition comprising a major amount of an oil of lubricating viscosity and a minor, property improving amount of an oil-soluble composition which comprises

(A) at least one metal salt of at least one dithiocarbamic acid of the formula

$$R_1(R_2)N\text{-}CSSH \qquad (I)$$

wherein R_1 and R_2 are each independently hydrocarbyl groups in which the total number of carbon atoms in R_1 and R_2 is sufficient to render the metal salt oil-soluble, and

(B) at least one oil-soluble sulfurized Diels-Alder adduct of at least one dienophile with at least one aliphatic conjugated diene, wherein the weight ratio of (A) to (B) is in the range of from about 1:10 to about 50:1 and further wherein the lubricating oil composition contains less than about 0.1% by weight of phosphorous.

4,623,474

OXIDATION AND CORROSION INHIBITORS FOR BORON-CONTAINING LUBRICANTS

Richard A. Holstedt, Whittier, Calif., and Peter Jessup, Millington, N.J., assignors to Union Oil Company of California, Los Angeles, Calif.

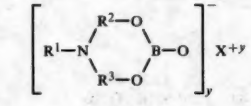
Filed Dec. 10, 1981, Ser. No. 329,385

Int. Cl.[4] C10M *133/38, 133/36, 135/26, 135/20*

U.S. Cl. 252—47.5 **10 Claims**

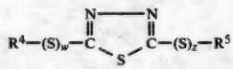
1. A lubricating composition comprising a major amount of a lubricating oil and a minor amount of:

(A) A extreme pressure, anti-wear and friction-reducing boron compound of the formula:



wherein R^1 is hydrogen, alkyl, cyclic, alicyclic, aryl, alkylaryl, or arylalkyl radicals having from 1 to about 24 carbon atoms, R^2 and R^3 are the same or different, straight or branched carbon chains, cyclic, alicyclic, aryl, alkylaryl or arylalkyl radicals having from 2 to about 20 carbon atoms, y is a number from 1 to 4, and X is scandium, titanium, vanadium, chromium, manganese, iron, cobalt, nickel, copper, zinc, tin or lead, or a mixture thereof;

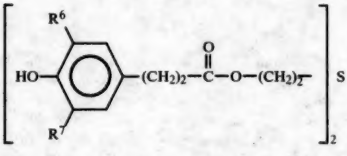
(B) A copper corrosion inhibitor comprising a hydrocarbon polysulfide derivative of 2,5-dimercapto-1,3,4-thiadiazole having the formula:



wherein R^4 and R^5 are moieties selected from hydrogen or straight or branched chain alkyl, cyclic, alicyclic, aryl, alkylaryl or arylalkyl radicals having from 2 to about 30 carbon atoms, provided that R^4 and R^5 are not both hydrogen and w and z are numbers from 1 to about 8;

(C) A lead corrosion inhibitor comprising terephthalic acid; and

(D) An anti-oxidant comprising a sulfur-bridged, bis-hindered phenol having the formula:



wherein R^6 and R^7 are selected from the same or different alkyl groups having from 1 to 6 carbon atoms.

4,623,475

FLUOROCHLOROHYDROCARBON COMPOSITIONS

Naonori Enjo, Suita, and Yuhkow Harada, Ibaraki, both of Japan, assignors to Daikin Kogyo Co., Ltd., Japan

Filed Sep. 28, 1984, Ser. No. 655,527

Claims priority, application Japan, Sep. 30, 1983, 58-183870

Int. Cl.[4] C09K *5/04*

U.S. Cl. 252—68 5 Claims

1. A fluorochlorohydrocarbon composition comprising:

(i) a fluorochlorohydrocarbon,

(ii) a boron compound selected from the group consisting of boron oxide, boric acid, alkali metal salt of boric acid, metaboric acid, alkali metal salt of metaboric acid, phenyl ester and alkyl ester of boric acid, phenylboronic acid, alkyl ester of phenylboronic acid, diphenylboronic acid, and alkyl ester of diphenylboronic acid, and

(iii) an ester of phosphoric acid selected from the group consisting of dialkyl phosphite having 2 to 30 carbon atoms, diphenyl phosphite having 2 to 30 carbon atoms and dialkylpentaerythritol diphosphite having 7 to 45 carbon atoms;

the amount of the boron compound being at least 5% by weight based on the total weight of the boron compound and the ester of phosphorous acid and the total amount of these two compounds being about 0.01 to about 5% by weight based on the weight of the fluorochlorohydrocarbon.

4,623,476

STABLE SUSPENSION OF PIGMENTS IN AQUEOUS HYPOCHLORITE BLEACH COMPOSITIONS

Bala C. Nayar; Kathleen G. Baier; David A. O'Brien, all of Cincinnati, and Edward M. Sawicki, Norwood, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 595,171, Mar. 30, 1984, abandoned. This application Jul. 2, 1985, Ser. No. 751,766

The portion of the term of this patent subsequent to Jul. 2, 2002, has been disclaimed.

Int. Cl.[4] C11D *3/395, 3/42*

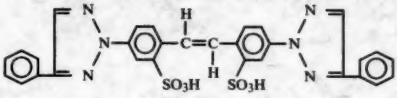
U.S. Cl. 252—94 21 Claims

1. An aqueous laundry composition comprising:

(a) from about 3% to about 10% sodium hypochlorite;

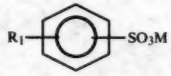
(b) from about 0.01% to about 0.3% of a bleach stable pigment selected from the group consisting of Ultramarine Blue, chlorinated indanthrone and their equivalents;

(c) from about 0.025% to about 0.2% of an optical brightener having the formula:

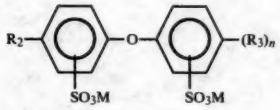


or the equivalent derivative salts thereof;

(d) from about 0.05% to about 2% of a surfactant selected from the group consisting of alkylaryl sulfonates having the formulas:



and



wherein R_1 is a C_8–C_{20} alkyl group, R_2 and R_3 are C_{10}–C_{16} alkyl groups, M is alkali metal and n is 0 or 1;

(e) from 0% to about 0.5% of a relatively bleach stable organic oil having a density of 0.8 to about 1.05 g/cc;

(f) from about 0% to about 10% of bleach stable buffering agent capable of maintaining the bleach pH between 10.5 and 13.5; and

(g) at least about 80% water;

wherein the pigment is uniformly dispersed in an aqueous system of said brightener and said surfactant; and wherein the said compositions is made by a process comprising the steps of:

1. preparing an aqueous system containing said pigment, said optical brightener, said surfactant, and said bleach stable organic oil;

2. adding slowly, and with low shear mixing, to the system of Step 1, a sufficient amount of aqueous sodium hypochlorite to produce a final composition comprising from about 3% to about 10% sodium hypochlorite, from about 0.01% to about 0.3% of pigment, from about 0.025% to about 0.2% optical brightener, from about 0.05% to about 2% surfactant, and from 0% to about 0.5% of said bleach stable organic oil;

3. Adding the buffering agent at the desired level to produce the final composition.

4,623,477

ESTER COMPOUNDS HAVING A PYRIMIDINE RING

Tetsuya Ogawa; Yasuyuki Goto; Kisei Kitano, all of Yokohamashi, and Naoyuki Yoshida, Kamakurashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

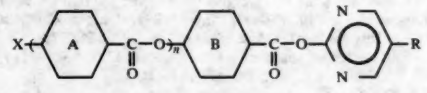
Filed Sep. 27, 1984, Ser. No. 654,877

Claims priority, application Japan, Oct. 7, 1983, 58-187997; Nov. 18, 1983, 58-217228

Int. Cl.[4] G09K *3/34;* G02F *1/13;* C07D *239/02*

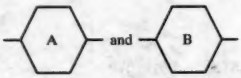
U.S. Cl. 252—299.5 28 Claims

1. Ester compounds having a pyrimidine ring expressed by the general formula

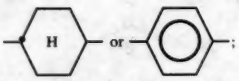


wherein R represents an alkyl or alkoxy group of 1 to 10

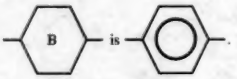
carbon atoms; X represents a halogen atom of F, Cl or Br, a cyano group or an alkyl or alkoxy group of 1 to 10 carbon atoms;



represent



n is 0 or 1; and when n is 1,



4,623,478

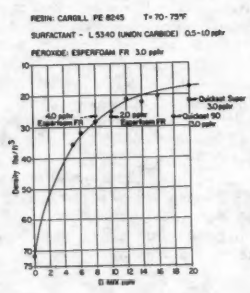
COMPOSITION AND METHOD FOR MAKING FOAMED POLYESTER RESIN

Ronald L. Pastorino, San Anselmo, Calif., assignor to U.S. Peroxygen Company, Richmond, Calif.

Division of Ser. No. 623,811, Jun. 22, 1984, Pat. No. 4,600,727. This application Mar. 6, 1986, Ser. No. 836,940

Int. Cl.[4] C06D 5/10

U.S. Cl. 252—350 **9 Claims**


RESIN: CARGILL PE 6245 T= 70 - 75°F
SURFACTANT - L 5340 (UNION CARBIDE) 0.5 - 1.0 pphr
PEROXIDE: ESPERFOAM FR 3.0 pphr
Density lbs/ft³
4.0 pphr Esperfoam FR
3.0 pphr Esperfoam FR
Quickset Super 3.0 pphr
Quickset 90 3.0 pphr
0 2 4 6 8 10 12 14 16 18 20
El Mix sure

1. A composition for use in foaming polyester resin at room temperature consisting of: a salt selected from sodium and potassium carbonates and bicarbonates; water; and intermixed therewith sufficient finely divided solid free flow agent to absorb said water and make the composition a free flowing powder.

4,623,479

BLOWING AGENTS AND THEIR USE IN PREPARATIONS OF POLYESTER FOAMS

Helena Z. Kucharska, and Thomas M. Burton, both of Sarnia, Canada, assignors to Fiberglas Canada Inc., Toronto, Canada

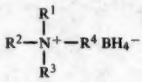
Division of Ser. No. 607,047, May 4, 1984, Pat. No. 4,507,406. This application Aug. 20, 1984, Ser. No. 642,323

Claims priority, application Canada, Dec. 12, 1983, 443118

Int. Cl.[4] C09K 3/00

U.S. Cl. 252—350 **8 Claims**

1. A liquid or readily liquifiable mixture of at least two different quaternary ammonium borohydrides selected from those falling within the formula:



wherein R^1, R^2 and R^3 may be the same or different and each is selected from alkyl, alkenyl, cycloalkyl, aryl, alkaryl and aralkyl groups and R^4 is selected from alkyl or alkenyl groups having from 6 to 30 carbon atoms, with the proviso that R^1, R^2 and R^3 and R^4 are not all alkyl or that R^1, R^2, or R^3 is not benzyl when the remainder of R^1, R^2, R^3 and R^4 are all alkyl, and with the proviso that the borohydrides of said mixture vary only with respect to differences in group R^4.

4,623,480

SYNERGISTIC MIXTURES OF NICKEL-CONTAINING 2,2'-THIOBIS(ALKYLPHENOLS) AND PYRAZOLATES

Francois Gugumus, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 31, 1984, Ser. No. 688,090

Claims priority, application Switzerland, Jan. 5, 1984, 32/84

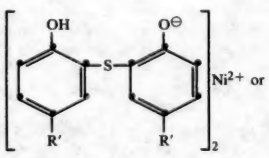
Int. Cl.[4] C08K 5/34

U.S. Cl. 252—400.53 **2 Claims**

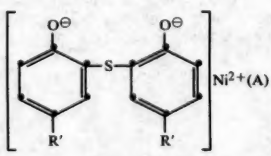
1. A stabilizer composition containing at least two Ni-containing light-stabilisers selected from the group consisting of the classes:

(1) compounds having the formula II or II'

(II)



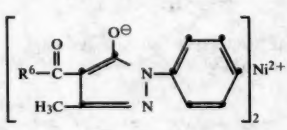
(II')



in which R' represents C_1–C_8 alkyl and in which nickel in the formula II' may optionally contain an additional ligand A, such as primary or secondary C_1–C_{18} alkylamine, triethanolamine, cyclohexyldiethanolamine or aniline, anisidine, toluidine, 1-naphthylamine, 2-naphthylamine, p-butylaniline, xylidine, p-octyloxyaniline or morpholine, hexamethyleneimine, piperazine or piperidine, and

(2) compounds having the formula V

(V)



in which R^6 represents C_4–C_{12} alkyl.

4,623,481

CONDUCTIVE PRIMERS

Jozef T. Huybrechts, Turnhout, and August T. Timmerman, Westerlo, both of Belgium, assignors to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Filed Sep. 21, 1984, Ser. No. 652,859
Int. Cl.[4] H01B 1/06
U.S. Cl. 252—511 6 Claims

1. An electrically conductive coating composition comprising

(a) 5–40% by weight of a block-copolymerized linear oligomer having an average of 3 to 20 mole units of alternating units of

n moles of linear epoxy oligomers terminated with oxirane groups on each end and an $\bar{M}n$ in the range of 300–5000, and

(n − 1) moles of fatty acid units terminated with carboxylic acid groups on each of two ends and having at least 9 carbon atoms,

said linear oligomer being terminated on each end with units of said epoxy oligomers,

(b) 1–20% of a blocked isocyanate which can be unblocked in the coating composition by heating at temperatures not higher than 140° C.,

(c) 1–30% of an aminoplast crosslinking agent,

(d) 0–40% by weight of pigment and extenders,

(e) 2–5% by volume based on binder solids of a conductive carbon black, and

(f) 20–80% by weight of organic solvents, having a specific conductivity measured as a dry, cured film of at least $5\times10^{-3}(\Omega cm)^{-1}$.

4,623,482

COPPER CONDUCTIVE PAINT FOR PORCELAINIZED METAL SUBSTRATES

Charles C. Y. Kuo, Elkhart, and Terry R. Bloom, Middlebury, both of Ind., assignors to CTS Corporation, Elkhart, Ind.

Filed Oct. 25, 1985, Ser. No. 791,382
Int. Cl.[4] A01B 1/06
U.S. Cl. 252—512 20 Claims

1. A thick film copper conductive paint suitable for firing upon a high temperature porcelainized metal substrate, which comprises:

a copper conductive powder mixture with 82 to 98.5 percent copper powder, 0.5 to 12 percent copper hydroxide, and 1 to 6 percent non-reducible borosilicate glass frit, wherein 75 to 90 percent of the powder mixture is blended with 10 to 25 percent screening agent to form the copper conductive paint.

4,623,483

METHOD FOR IMPROVING WATER SOLUBILITY OF SURFACTANTS USING NOPOL DERIVED SULFONATES

Vincent Lamberti, Upper Saddle River, and Eddie N. Gutierrez, Fort Lee, both of N.J., assignors to Lever Brothers Company, New York, N.Y.

Division of Ser. No. 583,557, Feb. 27, 1984, Pat. No. 4,530,801.
This application Feb. 25, 1985, Ser. No. 704,990
Int. Cl.[4] C11D 3/34, 1/22
U.S. Cl. 252—545 3 Claims

1. A method for increasing the solubilty of an only partially water-soluble material, said material being present in an amount of from 1% to 50% and selected from the group consisting of anionic, nonionic, cationic, zwitterionic, amphoteric surfactants and mixtures thereof, comprising combining with said material in water, in an effective amount to increase said solubility, a hydrotrope selected from the group consisting of the alkali metal, alkaline earth metal, ammonium and alkylolammonium salts of p-methy-6-ene-7-methylol-2-sulfonic acid and of p-menth-7-methylol-2-sulfonic acid.

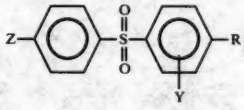
4,623,484

PROCESS FOR PEPTIDE SYNTHESIS

Louis A. Carpino, Amherst, Mass., and Beri Cohen, Tarrytown, N.Y., assignors to Research Corporation, New York, N.Y.

Division of Ser. No. 614,344, May 24, 1984, Pat. No. 4,575,541.
This application Dec. 5, 1985, Ser. No. 805,483
Int. Cl.[4] C07K 1/04, 1/00, 7/44
U.S. Cl. 525—54.11 3 Claims

1. In a process for producing peptides by reacting a protected amino acid with an activated polymeric support or substrate, the improvement comprising employing as said polymeric support or substrate compounds of the formula



wherein

Z is polystyrene, or a copolymer comprising styrene and a divinyl benzene comonomer.

Y is selected from the group comprising nitro, acyl, carboxyl, formyl, cyano, carbalkoxy, aryl sulfone, alkyl sulfone, carboxyamide, or halogen; and

R is hydroxy, aryloxy, alkoxy, halogen, formyloxy, acyloxy, cyano, amino acylamino, alkylamino, carboxyamine, thiol, alkylthio, arylthio, aralkylthio or acylthio.

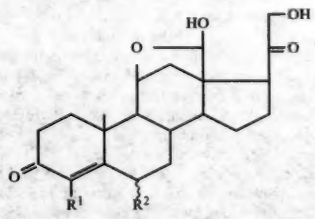
4,623,485

4- OR 6-SUBSTITUTED ALDOSTERONES

Masao Kono, Ibaraki; Taichitro Komeno, Osaka; Shoichi Ishihara, Toyonaka; Akira Yamauchi, Osaka, and Tadashi Okabayashi, Nishinomiya, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed May 10, 1983, Ser. No. 493,280
Claims priority, application Japan, May 10, 1982, 57-78847
Int. Cl.[4] C07J 41/00, 43/00
U.S. Cl. 540—92 2 Claims

1. A substituted aldosterone of the formula:



(I)

wherein either one of R^1 and R^2 is hydrogen and the other is $-S(CH_2)_mCOR^3$ or $-OCO(CH_2)_nCOR^3$, provided that when R^1 is hydrogen, R^2 is $-S(CH_2)_mCOR^3$ or $-OCO(CH_2)_nCOR^3$ and when R^2 is hydrogen, R^1 is $-S(CH_2)_mCOR^3$; m being an integer from 1 to 3, n being an integer from 1 to 5 and R^3 being a residue of tyramine, a residue of iodinated tyramine, a residue of tyrosine lower alkyl ester, a residue of iodinated tyrosine lower alkyl ester, a residue of histamine, a residue of iodinated histamine, a residue of histidine, a residue of iodinated histidine, a residue of 7-aminoheptanoyltyrosine lower alkyl ester, a residue of iodinated 7-aminoheptanoyltyrosine lower alkyl ester, or its (18-20)-acetal 20,21-ketonide.

4,623,486

[4-SUBSTITUTED BENZOYLOXY]-N-SUBSTITUTED-2H-1,2-BENZOTHIAZINE-3-CARBOXAMIDE 1,1-DIOXIDES HAVING ANTI-ARTHRITIC ACTIVITY

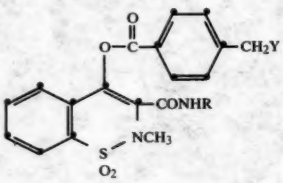
Joseph G. Lombardino, Niantic, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed May 29, 1985, Ser. No. 738,805

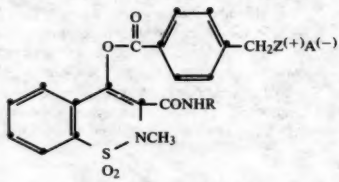
Int. Cl.[4] C07D *417/10, 279/16;* A61K *31/54*

U.S. Cl. 514—212 **24 Claims**

1. A compound of the formula:



or



or a pharmaceutically acceptable acid addition salt thereof, wherein

R is 2-pyridyl, 6-methyl-2-pyridyl, 6-fluoro-2-pyridyl, 6-chloro-2-pyridyl, 5-methyl-3-isoxazolyl or 2-thiazolyl;

Y is N,N-dialkylamino having up to three carbon atoms in each alkyl moiety, N-methyl-N-benzylamino, N-ethyl-N-benzylamino, N-methyl-N-(β-phenylethyl)amino, N-ethyl-N-(β-phenylethyl)amino, N-methyl-N-cycloalkylamino and N-ethyl-N-cycloalkylamino each having up to six carbon atoms in the cycloalkyl moiety, N-methyl-N-phenylamino, N-ethyl-N-phenylamino, N-methyl-N-(p-chlorophenyl)amino, N-ethyl-N-(p-chlorophenyl)amino, N-methyl-N-(N',N'-dimethylcarbamylmethyl)amino, N-methyl-N-(N,N'-diethylcarbamylmethyl)amino, pyrrolidino, piperidino, 2-methylpiperidino, 2-ethylpiperidino, homopiperidino, 1-azacyclooctyl, N-methylpiperazino, morpholino or thiomorpholino;

Z is pyridinium, 2-methylpyridinium, 3-methylpyridinium, 4-methylpyridinium, 2,6-dimethylpyridinium, 2,4,6-trimethylpyridinium, 3-ethylpyridinium, 4-ethylpyridinium, 3-ethyl-4-methylpyridinium, 4-ethyl-2-methylpyridinium or 5-ethyl-2-methylpyridinium; and

A is a pharmacologically acceptable anion.

24. A method for treating arthritic conditions in a warm-blooded animal, which comprises administering to said animal an effective anti-arthritic amount of a compound as claimed in claim **1**.

4,623,487

PROCESS FOR RECOVERY OF FLUOROSURFACTANTS

Charles S. Cope, Parkersburg, W. Va., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Continuation-in-part of Ser. No. 711,835, Mar. 14, 1985, abandoned. This application Feb. 7, 1986, Ser. No. 825,881

Int. Cl.[4] C07C *51/02, 51/48;* C11C *1/00*

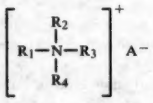
U.S. Cl. 260—408 **4 Claims**

1. A process for recovering fluoroalkanoic acid from an aqueous medium which comprises

(a) treating an aqueous mixture containing a compound of the formula

$$X\text{-}R_f\text{-}COOM$$

where R_f is a saturated, perfluorinated linear or methyl-branched alkylene group containing from 5 to 10 carbon atoms, X is a member of the class consisting of hydrogen, fluorine or chlorine, and M is a member of the class consisting of H, ammonium or alkali metal, with a quaternary ammonium compound of the formula



where each R is alkyl of 1 to 16 carbon atoms, aryl of 6–10 carbon atoms or aralkyl of 7–11 carbon atoms, with the proviso that the sum of the carbon atoms in R_1 and R_2 equals at least 15, and A is an anion, to form a quaternary ammonium fluoroalkanoate salt,

(b) contacting the resulting mixture formed in (a) with a chlorinated hydrocarbon liquid to extract the salt from the aqueous mixture,

(c) separating the salt from the chlorinated hydrocarbon liquid,

(d) adding acidified water to the separated salt and subjecting the resulting mixture to steam distillation whereupon the fluoroalkanoic acid is distilled, and

(e) collecting the fluoroalkanoic acid distillate.

4,623,488

REFINED FISH OILS AND THE PROCESS FOR PRODUCTION THEREOF

Masayasu Takao, Chiba, Japan, assignor to Q.P. Corporation and Nitto Hogei Co., Ltd, both of, Japan, a part interest

Division of Ser. No. 626,114, Jun. 29, 1984, Pat. No. 4,554,107. This application May 2, 1985, Ser. No. 729,865

Claims priority, application Japan, Jul. 18, 1983, 58-130602

Int. Cl.[4] C11B *3/00, 3/02, 3/12*

U.S. Cl. 260—410.7 **7 Claims**

1. A refined fish oil obtained as the product of the process which comprises subjecting a mixture of a polyhydric alcohol, a monoglyceride and a fish oil to a preliminary molecular distillation to remove volatile components and deodorize the fish oil, subjecting the deodorized fish oil thus obtained to further molecular distillation and recovering the vaporized constituents as the refined fish oil.

4,623,489

METHOD OF REFINING EDIBLE OIL FOR PREVENTING AUTO-OXIDATION OF THE OIL

Jacob B. Rivers, Jr., 2801 NW. Expressway, Suite 125, Oklahoma City, Okla. 73120

Filed Apr. 2, 1985, Ser. No. 719,220

Int. Cl.[4] C09F *5/10;* C11B *3/04*

U.S. Cl. 260—424 **12 Claims**

1. An improved method for refining and deodorization of edible oil of the type including air-isolated and continuous steps of degumming by acid-water washing of the oil; the improvement comprising the step of:

deaerating the oil during the step of degumming by deaerating the acid-water mixture used in the process of degumming to less than one thousand parts per billion of dissolved oxygen so that as the acid-water mixture removes phosphatides it also removes oxygen from the oil due to oxygen in the oil being dissolved in the deaerated acid-water mixture and removed therewith.

4. An improved method for continuous refining and deodor-

ization of edible oil of the type including air-isolated and continuous steps of degumming by acid-water washing of the oil and bleaching by clay filtration of the oil followed by removal of fatty acids by vacuum distillation; the improvement comprising the steps of:

deaerating the oil during the step of degumming by deaerating the acid-water mixture used in the process of degumming to less than one thousand parts per billion of dissolved oxygen so that as the acid-water mixture removes phosphatides it also removes oxygen from the oil due to oxygen in the oil being dissolved in the deaerated acid-water mixture and removed therewith; and

protecting the deaerated oil from said deaerating step during the step of bleaching by deaerating the clay used in the bleaching step.

4,623,490

PROCESS FOR THE PURIFICATION OF SULFONATED ARYL PHOSPHINES

Ludger Bexten, Hünxe; Boy Cornils, Dinslaken, and Dieter Kupies, Duisburg, all of Fed. Rep. of Germany, assignors to Ruhrchemie Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Filed Aug. 27, 1985, Ser. No. 770,303

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1984, 3431643

Int. Cl.⁴ C07C *143/24*

U.S. Cl. 260—505 P **7 Claims**

1. A process for the purification of salts of at least one member of the group consisting of diphenylphosphine-phenyl-m-sulfonic acid, phenylphosphine-di-(m-phenylsulfonic acid) and triphenylphosphine-tri-(m-sulfonic acid) from aqueous solutions thereof comprising adding at least a molar equivalent amount of at least one member of the group consisting of di-(n-pentyl)-amine, di-(n-hexyl)-amine and water-soluble salts of said amines to an aqueous solution containing at least one member of the group consisting of diphenylphosphine-phenyl-m-sulfonic acid, phenylphosphine-di-(m-phenylsulfonic acid), triphenylphosphine-tri(m-sulfonic acid) and salts thereof to adjust the pH value to ≦7, recovering the precipitate, washing the precipitate and dissolving the same in an aqueous basic solution.

4,623,491

PROCESS FOR THE PREPARATION OF HALOGENATED ALIPHATIC CARBOXYLIC ACID FLUORIDES

Günter Siegemund, Hofheim am Taunus, and Werner Schwertfeger, Langgöns, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jun. 14, 1985, Ser. No. 745,254

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1984, 3422576

Int. Cl.⁴ C07C *51/60*

U.S. Cl. 260—544 F **14 Claims**

1. A process for the preparation of a halogenated aliphatic carboxylic acid fluoride, which comprises reacting in the presence of a Lewis acid as catalyst a halogenated aliphatic carboxylic acid with a trihalogenomethyl aromatic fluorinating reagent containing, as a predominant total or exclusively, fluorine atoms in the trihalogenomethyl groups.

4,623,492

AERATOR FOR LIQUIDS

Konrad Pastorek, Sollenau, Austria, assignor to Overhoff Ges m.b.H., Leobersdorf, Austria

Filed Jul. 22, 1985, Ser. No. 757,303

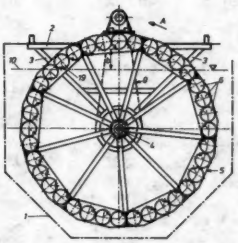
Claims priority, application Austria, Jul. 23, 1984, A 2369/84

Int. Cl.⁴ B01F *3/04*

U.S. Cl. 261—92 **19 Claims**

1. An aerator for liquids, particularly an aerator for water, said aerator comprising

at least one aerating basin, at least two coaxial wheels disposed in the aerating basin and revolving about an axis which is parallel to the surface of the liquid in the aerating basin, a plurality of immersible elongate bodies, which constitute a circular series, which is centered on said axis, and are angularly spaced apart, so that each of said immersible bodies emerges entirely out of the liquid on one side of the aerating basin and is entirely immersed into the liquid on the other side of the aerating base, and each of



said immersible bodies comprises a plurality of axially aligned discs, each of which is formed at its rim with an axially and peripherally extending edge flange so that a chamber is defined between adjacent discs, and each of said flanges is formed with a slot in a portion which faces vertically downwardly as the disc enters the fluid, and that at least one of said extending edge flanges is stepped so that each of said discs is adapted to be fitted on another disc.

4,623,493

GAS/LIQUID CONTACTING APPARATUS

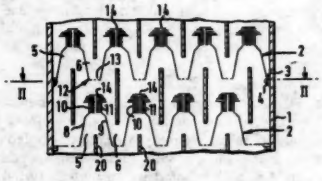
Jeremy B. Bentham, The Hague, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed May 20, 1985, Ser. No. 735,509

Claims priority, application United Kingdom, May 24, 1984, 8413336

Int. Cl.⁴ B01F *3/04*

U.S. Cl. 261—109 **5 Claims**



1. A gas liquid contacting apparatus including a substantially vertical housing having gas liquid guiding units extending over substantially the total cross section of said housing, each of said gas liquid guiding units comprising:

gas passage means forming an upwardly converging gas passage having an elongated form;

liquid passage means forming a downwardly converging liquid passage having an elongated form, said liquid passage means being positioned above and aligned with said elongated form of said gas passage means, said liquid passage means having an open upper end and a bottom wall, said bottom wall having liquid discharge openings; and

a plurality of substantially horizontal parallel spaced walls mounted adjacent the upper end of said gas passage

means, said walls forming a plurality of horizontal constricted gas outlets for directing horizontal gas streams towards the liquid falling from the liquid passage means positioned above said gas passage means, each succeeding one of said walls increasing in length in a downward direction, said gas passage means includes a plurality of L-shaped members mounted adjacent the upper end of said gas passage means, said L-shaped members being disposed so that the legs thereof form a plurality of vertical passages that extend downwardly into said gas passage means and the bases thereof form said horizontal parallel walls.

4,623,494

ATMOSPHERIC COOLING TOWER WITH REDUCED VAPOR CLOUD

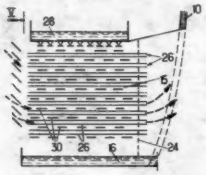
Daniel M. Gautier, Vigny, and Andre Lagoutte, Villemonble, both of France, assignors to Electricite de France, France

Filed Jan. 25, 1985, Ser. No. 695,000

Claims priority, application France, Jan. 25, 1984, 84 01135

Int. Cl.[4] B01F *3/04*

U.S. Cl. 261—161 **9 Claims**



1. A wet atmospheric cooling tower having:

a vertical chimney defining an air path from air inlet openings at the lower end thereof for admitting atmospheric air to an exhaust opening at the upper end thereof;

a stationary packing extending circumferentially without any gap across said air path and comprising a plurality of slats,

water distribution means for spraying water to be cooled onto said packing from above said packing, whereby said water is cooled down by air while it flows down across said packing and along said slats,

means for collecting water dripping from said packing and recirculating it to said water distribution means,

and dry air-water heat exchange means comprising dry air ducts extending throughout said packing and defining passages parallel to the air path and arranged to receive atmospheric air only, said ducts having outlets in said air path in a zone of said air path which is beyond a downstream end of said packing and isolated from said water distribution means whereby water to be cooled down does not enter said outlets, said ducts being spaced from said slats and being distributed according to a two dimensional network between said slats and without any circumferential gap.

4,623,495

METHOD AND APPARATUS FOR MANUFACTURING AN OPTICAL FIBER CABLE

Bernard Degoix, and Daniel Boussemaer, both of Calais, France, assignors to Les Cables de Lyon, Clichy, France

Filed Apr. 19, 1984, Ser. No. 601,819

Claims priority, application France, Apr. 22, 1983, 83 06617

Int. Cl.[4] B29C *47/02;* **G02B** *6/44*

U.S. Cl. 264—1.5 **7 Claims**

1. A method of manufacturing an optical fiber cable comprising the steps of:

pulling a traction-resisting axial strength member constituted by at least one wire of precipitation hardened martensitic steel of a high coefficient of elasticity through an extrusion machine head under and initial axial traction stress, extruding a thermoplastic material having a coefficient of elasticity substantially matching that of said strength member about the axial strength member to embed the axial strength member in an extruded rod of thermoplastic material with the speed of the axial strength member moving through said extrusion machine head being such that the rod and the strength member are subjected to an initial axial traction stress extending them by less than their elastic limits;

forming grooves or cavities within the periphery of the rod during thermoplastic material extrusion of said rod, disposing optical fibers in the grooves or cavities of the rod while under said axial traction stress; and

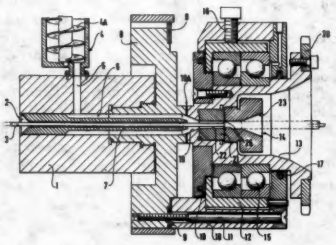
then removing the axial traction stress such that excessive traction stresses are prevented from occurring to the optical fibers during further handling of the cable.

6. Apparatus for manufacturing an optical fiber cable comprising:

a traction-resisting axial strength member made of precipitation hardened martensitic steel of a high coefficient of elasticity,

said axial strength member being embedded in a rod of thermoplastic material having a substantially equal coefficient of elasticity to that of said axial strength member, said rod being provided with longitudinal grooves or cavities in its periphery in which optical fibers are received, the rod being surrounded by a protective sheath,

said apparatus comprising:



an extrusion machine having a head incorporated in a hot plate including a heating means, said head terminating in an axial outlet,

a rotary die having an axial inlet,

a means connecting said extrusion machine to said rotary die with said head outlet aligned with said die inlet and the said rotary die being separated from the front face of the extrusion machine by a small axial gap of sufficient size to insure that a small controlled amount of plastic material leaks radially at said gap to the exterior of the apparatus,

a means for feeding thermoplastic material to said head for extrusion through said axial outlet,

a means for feeding said traction-resisting axial strength member through said extrusion machine head and through such rotary die subjected to an initial axial traction stress and at a velocity of such that the thermoplastic material and the axial strength member are both subjected to initial axial traction stress extending them by less than their elastic limits, said connecting means comprising a fixed member extending around said rotary die fitted with bearings internally, situated downstream of said small axial gap far enough from the hot plate to avoid being excessively heated thereby, screws fixably connecting said fixed member to said extrusion machine head, said fixed member including means bearing on the rotary die for centering the rotary die inlet relative to the head outlet such that said die is freely rotatable internally of said fixed member on said bearing and said rotary die having a bore through which said axial strength member passes and forming

longitudinal grooves or cavities in the periphery of the thermoplastic material rod extruded about the axial strength member during passage therethrough, for facilitating the placement of optical fibers within said longitudinal grooves or cavities in the periphery of the thermoplastic material rod downstream of said rotary die while said fixed member maintains said freely rotatable die axially spaced from the front face of the extrusion machine by said small axial gap.

4,623,496

METHOD OF MANUFACTURING AN OPTICAL ELEMENT HAVING AN ASPHERIC SURFACE

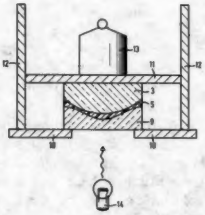
Johannes M. G. Verhoeven; Albert Smid, and Herman M. A. Amendt, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 18, 1984, Ser. No. 683,094

Claims priority, application Netherlands, Jan. 18, 1984, 8400152

Int. Cl.[4] B29D *11/00*

U.S. Cl. 264—1.7 **1 Claim**



1. A method of manufacturing an optical element, said optical element comprising a layer of synthetic resin on an approximately spherical surface of a substrate, said method comprising the steps of:

providing a matrix, said matrix having a rotationally symmetrical concave aspherical surface having a collection of inflection points situated approximately on a circle;

providing a curable liquid synthetic resin on the aspherical surface of the matrix;

providing a substrate having an approximately spherical convex surface with a radius of curvature;

arranging the substrate so that its spherical surface is opposite the aspherical surface of the matrix;

pressing the substrate and matrix toward each other until they are spaced apart a desired distance; and the

curing the synthetic resin to form a layer having an aspherical convex outer surface with a collection of inflection points situated approximately on a circle, said layer having a varying thickness;

characterized in that the radius of curvature of the spherical surface of the substrate is chosen so that the minimum thickness of the resin layer is located adjacent to the collection of inflection points.

4,623,497

PASSIVE MOLD COOLING AND HEATING METHOD

Michael A. Waters, Elk Grove Village, Ill., assignor to Application Engineering Corporation, Wood Dale, Ill.

Filed Nov. 28, 1984, Ser. No. 675,877

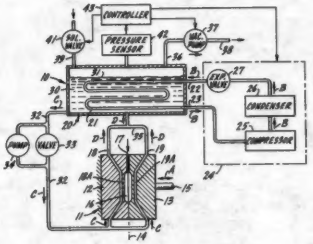
Int. Cl.[4] B29C *35/04, 35/16*

U.S. Cl. 264—40.6 **16 Claims**

1. The method of modifying the temperature of a mold for molding articles of plastic or like materials, the mold including a plurality of vertically extending internal passages for a heat transfer fluid, the method comprising:

A. connecting the internal passages of the mold into a closed loop with a heat exchanger, the relative elevations of the mold and the heat exchanger being such that a heat transfer fluid tends to flow from the mold passages to the heat exchanger in response to the effect of gravity when the fluid is in a given physical state;

B. filling the closed loop, including the mold passages and the heat exchanger, with a heat transfer fluid that changes from an initial physical state to the given physical state in response to thermal conditions occurring in critical portions of the mold passages during operation of the mold, the fluid in the mold passages being in the initial physical state and the heat exchanger containing fluid in both physical states when filling is completed;



C. Establishing a predetermined operating pressure in the closed loop; and

D. controlling operation of the heat exchanger to maintain a controlled operating pressure in the closed loop and to change fluid in the heat exchanger from the given physical state back to the initial physical state at approximately the same rate as the fluid flows from the mold to the heat exchanger, thus achieving basic circulation of heat transfer fluid in the closed loop through the effect of gravity based upon a change of state of the heat transfer fluid.

4,623,498

METHOD OF IMPROVING QUALITY OF HOT PRESSED SI_3N_4 BODIES

Elaine C. Beckwith, Riverview, and Andre Ezis, Grosse Ile, both of Mich., assignors to Ceradyne Advanced Products, Inc., Costa Mesa, Calif.

Continuation-in-part of Ser. No. 444,249, Sep. 30, 1982, abandoned. This application Jul. 12, 1984, Ser. No. 630,178

Int. Cl.[4] C04B *35/58, 38/04*

U.S. Cl. 264—65 **13 Claims**

1. A method of making a silicon nitride comprising object, comprising:

(a) forming a preform by compacting a mixture of unpurified silicon powder and oxygen carrying agents in an amount effective to form intergranular second phase crystallites with Si_3N_4 upon heating in a nitrogen bearing atmosphere;

(b) heating the preform in a nitrogen atmosphere to react the ingredients thereof and agglomerate the mixture to an increased density no greater than 2.7 gm/cm^3, said agglomerated preform being constituted of silicon nitride, silicon oxynitride crystallites, silicate, and impurities from the group consiting of Si, Fe, silicides, Fe_2O_3, and other oxygen carrying agents other than SiO_2;

(c) immersing said heat treated preform in one or more stages in one or more leaching solutions of effective concentration to substantially remove at least one of said group of impurities; and

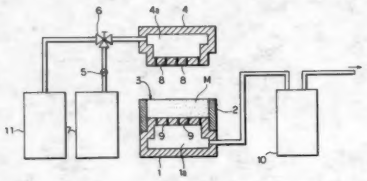
(d) heating said treated preform to heat fusing condition to form a unitary, substantially fully dense silicon nitride comprising object.

4,623,499

METHOD FOR MANUFACTURE OF SHAPED ARTICLE OF ORGANIC SUBSTANCE

Toyoji Fuma; Kazuyuki Nishikawa, both of Toyokawa; Naoshi Makiguchi, Aichi; Katsuya Nagano; Yoshio Nakayama, both of Okazaki, and Hiroyuki Sasaki, Okazaki, all of Japan, assignors to Nihon Sekiso Kogyo Co., Ltd. and Sintokogio Ltd., both of Nagoya, Japan

Filed Aug. 9, 1984, Ser. No. 639,172
Int. Cl.[4] B29C *35/18*
U.S. Cl. 264—83 2 Claims



1. A method for the manufacture of a shaped article of an organic substance, comprising:

the step of mixing an organic substance as a raw material with a binder containing a polyol and an isocyanate,

the step of filling a die with the resultant binder containing mixture,

the step of compressing said mixture in the shape of said die, and

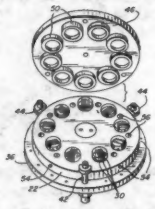
the step of forcing a gaseous curing agent of triethylamine or dimethyl ethylamine through the compressed mixture within said die thereby chemically curing said binder and consequently solidifying the compressed mass at room temperature.

4,623,500

METHOD OF MOUNTING A PLURALITY OF COUPONS IN MOLDED MATERIAL AND POLISHING SURFACES THEREOF FOR CROSS-SECTIONAL ANALYSIS OF PRINTED CIRCUIT BOARDS

James A. Nelson, Mundelein, and Robert E. Zimmer, Niles, both of Ill., assignors to Buehler Ltd., Lake Bluff, Ill.

Division of Ser. No. 618,476, Jun. 8, 1984, Pat. No. 4,534,536.
This application Apr. 18, 1985, Ser. No. 724,754
Int. Cl.[4] B29C *39/10, 37/02*
U.S. Cl. 264—162 4 Claims



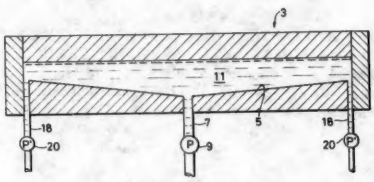
1. A method of mounting a plurality of coupons taken from printed circuit board panels for purposes of polishing such coupons, said method comprising, in combination, pinning a plurality of coupons together in spaced relation using a pair of disposable pins which extend through each coupon on the side opposite the cross-sectional surface to be polished so as to form a pinned coupon assembly, placing said pinned assembly in a mold with the cross-sectional surfaces to be polished facing upwardly, and adding molding material to the mold to produce a pinned assembly mounted in a plastic mount.

4,623,501

METHOD AND APPARATUS FOR COATING A SUBSTRATE

Keiichi Ishizaki, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 18, 1984, Ser. No. 651,569
Claims priority, application Japan, Sep. 19, 1983, 58-172830
Int. Cl.[4] B29C *39/20*
U.S. Cl. 264—171 10 Claims



1. A coating method in which a coating composition is supplied through a main supply pipe into a cavity in a coating head and extruded through a slot communicating with the cavity so as to be applied to moving web, and wherein said coating composition tends to stagnate in said cavity and solidify in said slot, comprising the steps of:

providing auxiliary supply pipes opening into said cavity at both ends of said cavity; and

supplying a liquid through said auxiliary supply pipes to said coating head to prevent stagnation of said coating composition in said cavity and solidification in said slot.

6. A coating apparatus in which a coating composition is supplied into a cavity in a coating head and extruded through a slot communicating with the cavity so as to be applied to a moving web continuously, comprising:

a main supply pipe to supply coating composition into said cavity;

auxiliary supply pipes opening into said cavity at both ends of said cavity; and

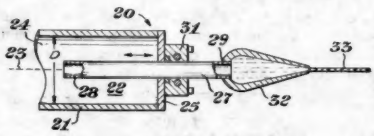
pump means for supplying liquid through said auxiliary supply pipes to said coating head for preventing stagnation of coating composition in said coating head.

4,623,502

METHOD AND APPARATUS FOR THE EXTRUSION OF SYNTHETIC RESINOUS THERMOPLASTICS

Arie Cohen, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 15, 1985, Ser. No. 712,044
Int. Cl.[4] B29C *47/16*
U.S. Cl. 264—176.1 2 Claims



1. A method for the extrusion of heat plastified synthetic resinous compositions into extrudates including the steps of supplying a heat plastified synthetic resinous composition to a supply chamber, passing the heat plastified composition to a discharge conduit projecting into the supply chamber wherein the cross section of thermoplastic material in a direction normal to the direction of principal flow has an area equal or greater than 16 times the area of the discharge conduit, the area of the discharge conduit being a section normal to the direction of principal flow of thermoplastic resin therein, the supply

chamber having a terminal end through which the discharge conduit passes, the discharge conduit having an entrance end and an exit end, the entrance end being positioned within the supply chamber at a location spaced from the supply chamber end at a location wherein reduced melt fracture is obtained; the entrance end of the discharge conduit being selectively positioned so as to be spaced from the supply chamber end at a distance within the range of about one-half to about twice the average diameter of the supply chamber to minimize surface roughness of the extrudates for the particular resinous composition being extruded.

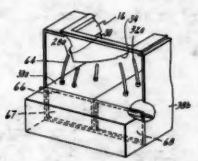
2. An extrusion apparatus for the extrusion of heat plastified synthetic resinous compositions into extrudates of a desired shape and generally smooth surface, the apparatus comprising in operative combination a supply chamber adapted to receive heat plastified synthetic resinous material, the supply chamber having an entrance end and a discharge end, a discharge conduit, the discharge conduit having an entrance end and an exit end, the discharge conduit being generally coaxially disposed relative to the supply chamber, the discharge conduit being affixed to the discharge end of the supply chamber in a generally leakproof manner, the supply conduit having a major average diameter in a plane normal to a longitudinal axis thereof, the average diameter of the supply chamber being defined by an inner wall thereof, the discharge conduit having an average diameter in a plane normal to the longitudinal axis thereof defined by an external wall of the discharge conduit, the average diameter of the supply chamber being at least 4 times that of the average diameter of the discharge conduit, the discharge conduit having its first end selectively positioned so as to be extending into the supply chamber, a distance of from about one-half to about twice the average diameter of the supply chamber to minimize surface roughness of the extrudates for the particular resinous material being extruded.

4,623,503

SLUSH MOLDING METHOD WITH SELECTIVE HEATING OF MOLD BY AIR JETS

Emmanuel Anestis, Raymond, and Frederick I. Wakefield, Durham, both of N.H., assignors to Ex-Cell-O Corporation, Troy, Mich.

Filed Nov. 21, 1984, Ser. No. 673,810
Int. Cl.[4] B29C *39/00, 41/18*
U.S. Cl. 264—302 **1 Claim**



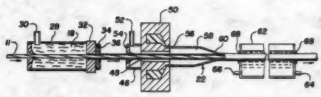
1. A method for molding a heat gellable material comprising: disposing said material on a mold in a plenum chamber having plural nozzles for directing air toward first and second outer surface portions of said mold, opening some of said nozzles to a single source of air at an elevated temperature and closing others of said nozzles to the source of air at the elevated temperature, impinging air only from said open ones of said plural nozzles against said first outer surface portion at said elevated temperature to differentially heat said first and second mold surfaces, a first portion of said surfaces being heated by air jets from said open nozzles to a temperature sufficient to gel said gellable material while the second portion of said outer mold surface is exposed only to the closed nozzles to remain at a temperature insufficient to gel said material, disposing sufficient of said gellable material in said mold to form a desired thickness of gelled material, removing ungelled material from the mold and supplying all of the nozzles with air at a temperature sufficient to raise the temperature of the mold surfaces to a cure temperature for curing the heat gellable material disposed thereover.

4,623,504

METHOD AND APPARATUS FOR MAKING POST-TENSIONING TENDONS FOR CONCRETE

Larry F. Smith, 2600 Stone Creek, Plano, Tex. 75050

Filed Oct. 22, 1984, Ser. No. 663,584
Int. Cl.[4] B29C *47/02*
U.S. Cl. 264—566 **12 Claims**



1. The method of making a tendon suitable for use in post-tensioning concrete and for use in other applications comprising the steps of:

(a) coating a multiple-wire strand of helically wrapped wires with a thixotropic corrosion inhibitor;

(b) removing excess portions of said corrosion inhibitor from the outer surface of said strand and the interstices between adjacent helically wrapped wires at the surface of said strand to leave a thin coat of inhibitor on the helically wrapped wires of said strand; and

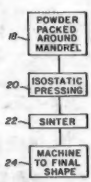
(c) forming around said coated strand a plastic jacket having an internal diameter greater than the external diameter of said coated strand such that an air space exists between said coated strand and an internal surface of said jacket.

4,623,505

METHOD OF IMPROVING STRUCTURES COMPRISED OF FIBER REINFORCED PLASTIC

G. Robert Traut, S. Killingly, Conn., assignor to Rogers Corporation, Rogers, Conn.

Continuation-in-part of Ser. No. 263,191, May 13, 1981. This application Jan. 25, 1982, Ser. No. 342,057
Int. Cl.[4] B27J *5/00*
U.S. Cl. 264—570 **19 Claims**



1. A method for the production of bodies of complex shape which reduce microwave reflection from fiber reinforced polymeric material comprising the steps of:

mixing a polymeric material in powdered form with reinforcing fibers;

forming a layer of the mixture around a mandrel having a surface contour commensurate with the interior surface of the body to be formed;

subjecting the layer to a sufficient pressure to compact the layer upon the mandrel to almost the ultimate desired density of the layer, the pressure being applied equally over the surface of the layer and in a direction which is substantially normal to the average surface contour of the mandrel;

heating the compacted layer to sinter the reinforced polymeric materials;

cooling the compacted layer; and

forming grooves on at least one of the interior or outer surfaces to the layer to reduce microwave reflection.

4,623,506

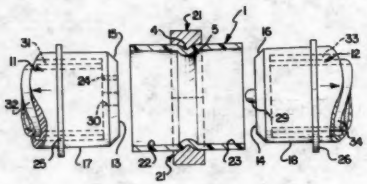
PROCESS FOR FORMING PLASTIC PIPE COUPLINGS

Andrew L. Cross, Burton, and Thomas F. Moran, Jr., Aurora, both of Ohio, assignors to Midwest Plastic Fabricators, Chagrin Falls, Ohio

Continuation-in-part of Ser. No. 403,348, Jul. 30, 1982, abandoned. This application Mar. 9, 1984, Ser. No. 587,493

Int. Cl.[4] B29D *23/00*

U.S. Cl. 264—573 **1 Claim**



1. A method of forming couplings for joining two lengths of pipe together from blanks made from extruded plastic pipe, comprising the steps of:

cutting a length of extruded thermoplastic pipe into blanks of appropriate length and heating said blanks to the thermoplastic point;

mounting said blank between two mandrels having ends, said mandrels having a close tolerance between the exterior surface of said mandrels and the interior surface of said blank;

bringing the ends of said mandrels substantially together at relatively uniform force and rate so that enough air is trapped between the mandrels to cause a bulge in the blank at the ends of the mandrels but most of the air escapes around the mandrels to prevent significant contact between the mandrel surfaces and the blank and prevent marring of the inside surface of the blank, there being an orifice and air conduit in one of the mandrels which causes excess air to escape and still allows for the bulge to be made;

capturing said blank in a split die at about said bulge and causing said die to impress a groove in the outside surface of said blank and form a ridge in the inside surface of said blank;

cooling said blank from the inside surface toward the outside surface so as to cause said blanks to contract against the mandrels;

supporting said blank in said split die while said mandrels are withdrawn; and

depositing said blank in a coolant bath.

4,623,507

DEVICE FOR LOCATING THE POSITION OF CONTROL RODS OF A NUCLEAR REACTOR

Alain Gravelle, Le Plessis Robinson, France, assignor to Framatome & Cie., Courbevoie, France

Filed Mar. 19, 1984, Ser. No. 590,936

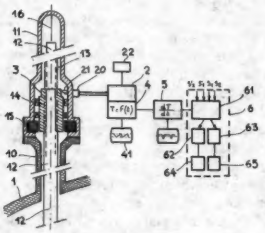
Claims priority, application France, Mar. 18, 1983, 83 04464

Int. Cl.[4] G21C *17/00*

U.S. Cl. 376—258 **4 Claims**

1. In a nuclear reactor comprising a set of control rods each suspended from a shaft mounted for vertical sliding movement inside an adaptator tube, a screw-nut mechanism being mounted on each adaptator tube for controlling the movement of the shaft of the corresponding control rod and each screw-nut mechanism comprising a rotor in the form of a nut mounted to rotate around the vertical axis of the tube and having a threaded bore in which a corresponding threaded part of the shaft engages, and means for driving the rotor in rotation in one direction or the other, the nut being locked in vertical movement and the shaft being locked in rotation, a device associated to each of said control rods for locating its position and comprising a transmitter-receiver of a beam of ultrasonic waves propagating in horizontal direction intersecting the axis of the shaft, the improvement wherein

(a) said device for locating the position of a control rod further comprises a wave reflecting, generally cylindrical surface (3) arranged on the side wall of said rotor (14) and having in cross-section a cam-shape profile comprising at



least one part forming a slope (31) over a narrow angular sector (A), the distance of said one part from the axis (16) of said shaft varying rapidly between a minimum and a maximum within said angular sector;

(b) means for receiving the waves reflected by said reflecting surface and for producing an impulse, each time said slope passes through the beam of ultrasonic waves during rotation of said rotor; and

(c) means for recording and counting the successive impulses in one or the other direction of rotation of said rotor.

4,623,508

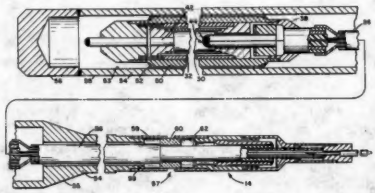
WIDE RANGE FLUX MONITOR ASSEMBLY

Frederick L. Glesius, Shaker Heights; John C. Kroon, Chagrin Falls; Donald A. Schneider, Lakewood, all of Ohio, and Arne L. Myrabo, Monticello, Minn., assignors to Reuter-Stokes, Inc., Twinsburg, Ohio

Filed Feb. 15, 1984, Ser. No. 580,480

Int. Cl.[4] G21C *17/00*

U.S. Cl. 376—254 **13 Claims**



5. An in-core wide range flux monitor assembly for boiling water reactors having a monitor range of 10^{-8}% to 100% full power comprising:

at least one source and intermediate range fission detector to detect neutron flux at least within the range of 10^{-8}% to 10% of full power and to produce a source and intermediate range output signal representative thereof, said detector having an ion chamber and an insulating oversheath for insulating said ion chamber from reactor vessel potential, said oversheath being exposed to reactor ground potential and electrically isolated from instrument ground

potential, an insulation ring being disposed adjacent said oversheath terminate end portion;

at least one power range fission detector to detect neutron flux at least within the range of 1% to 100% of full power and to produce a power range output signal representative thereof, said power range fission detector including an insulating oversheath; and,

means for processing the output signals whereby neutron flux may be monitored over a wide range of reactor power.

4,623,509

SAFETY DEVICE FOR A NUCLEAR FUEL ELEMENT LOADING MECHANISM

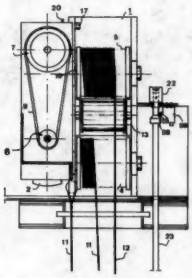
Mirko Fabris, Nivelles, Belgium, assignor to Ateliers de Constructions Electriques de Charleroi, Brussels, Belgium

Filed Mar. 1, 1983, Ser. No. 471,169

Claims priority, application European Pat. Off., Mar. 8, 1982, 82200290.3

Int. Cl.[4] G21C *19/00*

U.S. Cl. 376—268 **7 Claims**



1. Nuclear fuel element loading mechanism comprising an electric motor (9) activating a winding reel (4) by means of a reducing gear (2) to permit the displacement by means of an operating cable (11) in vertical guides (27) of a carriage (24) equipped with a pulley (26) and a basket (25) capable of containing a nuclear fuel element, characterized in that it comprises a safety device containing a second winding reel (4) carrying at least one emergency cable (12) attached to the carriage (24), moving at the velocity of the carriage (24) but not carrying the said carriage (24) in normal operation.

4,623,510

PERMANENT DISPOSAL OF RADIOACTIVE PARTICULATE WASTE IN CARTRIDGE CONTAINING FERROMAGNETIC MATERIAL

Michael Troy, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 28, 1983, Ser. No. 547,293

Int. Cl.[4] G21C *19/00*

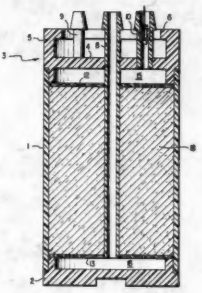
U.S. Cl. 376—272 **10 Claims**

1. A cartridge for permanent disposal of solid radioactive particulate waste, comprising:

a liquid impervious casing having an upper end cover, a lower end cover and a side wall extending between said covers, said casing enclosing a waste storage region;

ferromagnetic fibrous material defining a waste retaining matrix and filling a major portion of the waste storage region;

means defining an inlet conduit extending through said upper end cover and axially of said casing through the waste storage region, and opening into the waste storage region in the vicinity of said lower end cover; and



means defining first and second outlet conduits extending through said upper end cover and opening into the waste storage region in the vicinity of said upper end cover.

4,623,511

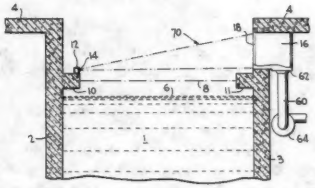
PUSH-PULL EXHAUST VENTILATION SYSTEM FOR NUCLEAR COMPONENT STORAGE AND REFUELING CANALS

Thaddeus T. Porembski, Jacksonville, Fla., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 26, 1984, Ser. No. 604,555

Int. Cl.[4] G21C *19/00*

U.S. Cl. 376—272 **10 Claims**



1. A ventilation system for nuclear installations having a water filled canal for storage or transport of radioactive components under water comprising:

a plurality of air nozzles positioned above the surface of the water and directed across said surface;

a manifold conduit connected to said nozzles and to air feed means;

at least one collecting hood having a plurality of openings therein positioned above said surface and spaced from said nozzles;

said openings in said hood substantially facing said canal;

means to feed air under pressure to said nozzles to produce a blast of air through said nozzles across said canal surface;

means to exhaust air through said hood openings to collect air above said surface and at least part of the air from said nozzles;

an exhaust duct connected to said hood openings and to said air exhaust means; and

said nozzles and said hood openings being positioned along opposite sides of said canal, said nozzles being substantially horizontally aligned, and said openings being substantially horizontally aligned.

4,623,512

DEVICE FOR FIXING A FUEL ARRAY TO THE LOWER CORE-SUPPORTING PLATE IN A NUCLEAR REACTOR

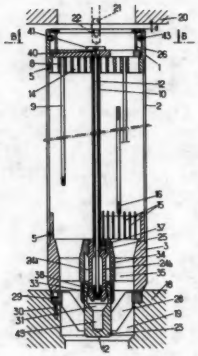
Guy Desfontaines, Puteaux, France, assignor to Framatome & Cie., Courbevoie, France

Continuation of Ser. No. 442,216, Nov. 16, 1982, abandoned. This application Jul. 10, 1985, Ser. No. 753,344

Claims priority, application France, Dec. 4, 1981, 81 22754

Int. Cl.[4] G21C *3/30*

U.S. Cl. 376—364 **3 Claims**



1. In a nuclear reactor comprising a core formed by prismatic assemblies arranged side by side inside the reactor vessel and comprising of a bundle parallel fuel rods **(16)** located between the two ends **(1, 3)** in the longitudinal direction of said asembly, or axial direction, and resting vertically on a lower core-supporting plate **(18)** via one of said ends **(3)**, or lower end, in correspondence with openings **(19)** provided in said plate **(18)**, said core being limited in its upper part by an upper core plate **(20)** pierced with openings in the region of each of said assemblies which are fixed to said lower core-supporting plate by fixing devices each comprising fastening means which can be put into action by operating means comprising a rod mounted along the axial direction of said assembly and having an upper end fast with a socket having a gripping surface for a lifting tool, the improvement consisting of fastening means comprising

(a) a fastening element **(23)** fast with said lower core plate **(18)**, in the central part of an opening **(19)** in said plate **(18)** corresponding to said assembly and having an axial opening **(31)** closed at its lower end and having fastening surfaces **(33)**;

(b) a split expandable sleeve having a shape complementary to that of said opening **(31)** in said fastening element **(23)**, and prolonging the lower end **(3)** of said assembly in its central part, in the axial direction; and

(c) a guide tube **(10)** passing through said assembly in the axial direction, in its central part, in which said rod is mounted for sliding movement, said rod bearing, at its lower end, an oval locking knob **(38)** having a diameter sufficient to cause expansion of said sleeve and locking of the latter to said fastening element **(23)** by axial displacment of said rod between an out-of-service position and a service position in which said oval knob **(38)** is introduced into said sleeve **(24)** so as to expand it.

4,623,513

DUCTILE LOW TEMPERATURE BRAZING ALLOY

Howard Mizuhara, San Mateo, Calif., assignor to GTE Products Corporation, Stamford, Conn.

Continuation of Ser. No. 394,226, Jul. 1, 1982, abandoned. This application Sep. 20, 1984, Ser. No. 757,962

Int. Cl.[4] C22C *5/06, 21/00, 9/00, 30/00*

U.S. Cl. 420—470 **7 Claims**

1. A brazing alloy consisting essentially of from about 0.25% to about 4% by weight of a reactive metal, selected from the group consisting of titanium, vanadium, zirconium and mixtures thereof, from about 20% by weight to about 98.75% by weight of silver and from about 1% to about 70% by weight of aluminum wherein said alloy has a liquidus temperature of from about 600° C. to about 950° C.

4,623,514

LIQUID METAL BRUSH MATERIAL FOR ELECTRICAL MACHINERY SYSTEMS

Om P. Arora, Silver Spring, and James H. Brady, Bowie, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 31, 1985, Ser. No. 739,656

Int. Cl.[4] C27C *28/00, 30/00*

U.S. Cl. 420—555 **4 Claims**

1. A method for transferring current between at least two points, comprising the steps of:

contacting the at least two points with an alloy comprising, by weight according to total alloy weight, from about 25.0 to about 48.0 percent bismuth, from about 0.8 to about 11.5 percent cadmium, from about 18.0 to about 53.5 percent indium, from 0.0 to about 24.0 percent lead, and from about 9.0 to about 17.0 percent tin; and

providing means for containing the alloy so that contact is maintained with each point notwithstanding whether the alloy is in a solid or liquid state.

4,623,515

PROCESS FOR PRODUCING FIBROUS AND GRANULAR MATERIALS FROM WASTE

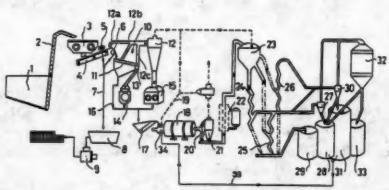
Josef Frei, Oberehrendingen; Hans Schweri, Flesenau, and Rudolf Schnorf, Uetikon am See, all of Switzerland, assignors to Organ-Fager Technology, N.V., Netherlands Antilles

Continuation of Ser. No. 333,401, Dec. 22, 1981, abandoned. This application Jul. 11, 1984, Ser. No. 628,136

Claims priority, application Switzerland, Dec. 24, 1980, 9557/80; Dec. 7, 1981, 7795/81

Int. Cl.[4] A61L *2/00*

U.S. Cl. 422—1 **17 Claims**



1. A process for producing a fibrous material and a granular material from solid household, agricultural, forestry, or industrial waste, said waste containing both inorganic and organic portions, comprising treating substantially the entirety of the waste by the steps of:

(a) dividing the waste into at least three first fractions including a fine fraction of particles which are smaller than a required final particle size, a mainly light coarse fraction of particles that are easy to reduce in size mechanically, and a mainly heavy coarse fraction of particles that are difficult to reduce in size mechanically;

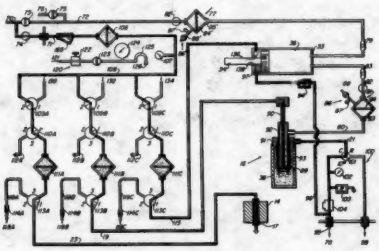
(b) separately reducing the particle size of said coarse fractions to said required final particle size;
(c) re-uniting all said first fractions;
(d) drying the re-united first fractions to a predetermined maximum residual moisture content and sterilizing said re-united first fractions;
(e) dividing the re-united, dried, sterilized first fractions into at least two final fractions, said at least two final fractions including a fibrous fraction and a granular fraction.

4,623,516

STERILIZING METHOD FOR AN ENCAPSULATING MACHINE

Gerhard H. Weiler, South Barrington; Paul A. Anderson, Arlington Heights, and Louis T. Pagels, Hanover Park, all of Ill., assignors to Automatic Liquid Packaging, Inc., Arlington Heights, Ill.

Division of Ser. No. 417,533, Sep. 13, 1982, Pat. No. 4,502,614, which is a division of Ser. No. 222,358, Jan. 5, 1981, Pat. No. 4,353,398. This application Dec. 31, 1984, Ser. No. 687,951
Int. Cl.[4] A61L *2/06;* **B65B** *55/00;* **F16L** *55/24*
U.S. Cl. 422—28 **3 Claims**



1. A method for sterilizing a machine used for forming, filling and sealing containers of thermoplastic material, said machine having:

a metering device communicating with a product supply line that supplies product to the device, said metering device including a variable volume dosing chamber for supplying an aliquot of product to be dispensed into a formed container, said metering device having a dosing chamber inlet and a dosing chamber outlet, said product supply line being connected to said inlet, said chamber having a piston positioned therein and actuated by a rod connected on one side of said piston thereby defining a piston side and a rod side within said chamber;

a first product filter positioned upstream from said inlet and a second product filter positioned downstream from said outlet;

an inlet check valve situated between said first product filter and said inlet and an outlet check valve situated between said outlet and said second product filter, both check valves controlling flow through the piston side of said dosing chamber;

a filling device communicating with the piston side of aid dosing chamber through said outlet, outlet check valve, and said second product filter, said filling device also being capable of communicating with a formed container;

a sterilizing media supply line adapted to communicate with (A) said rod side of said chamber through a first gas feed line, said first gas feed line having a first three-position, two-way valve, a second three-position, two-way valve, and a first microorganism filter positioned between said first and second valves, said first and second valves also being connectable to a first by-pass hose to provide a fluid flow by-pass around said first microorganism filter, said sterilizing media supply line also adapted to communicate with (B) said filling device through a second gas feed line, said second gas feed line having a third three-position, two-way valve, a fourth three-position, two-way valve, and a second microorganism filter positioned between said third and fourth valves, said third and fourth valves also being connectable to a second by-pass hose to provide a fluid flow by-pass around said second microorganism filter; and a source of sterilizing agent capable of being connected to said product supply line and to said sterilizing media supply line; said method comprising the steps of:

(a) establishing a flow of sterilizing agent sequentially through the product supply line, said first product filter, said inlet check valve, said piston side of said dosing chamber, said outlet check valve, said second product filter, said filling device and out to the atmosphere, whereby the flow of sterilizing agent sterilizes the interior surfaces of all fluid passageways that the sterilizing agent contacts;

(b) positioning said first and second second valves in a first position wherein communication is provided between said seterilizing media supply line and said first microorganism filter;

(c) establishing a flow of sterilizing agent sequentially through said sterilizing media supply line, said first valve, said first microorganism filter, said second valve, said rod side ofsaid dosing chamber and out to the atmosphere, whereby the flow of sterilizing agent sterilizes said first microorganism filter and all fluid passageways that the sterilizing agent contacts;

(d) positioning said first and second valve in a second position, wherein said first microorganism filter is by-passed, and connecting said first and second valves to said first by-pass hose; and

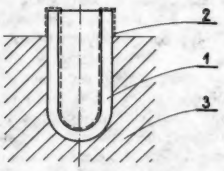
(e) establishing a flow of sterilizing agent sequentially through said sterilizing media supply line, said first valve, said first by-pass hose, said second valve, said rod side of said dosing chamber and out to the atmosphere, whereby the flow of sterilizing agent sterilizes all fluid passageways that the sterilizing agent contacts.

4,623,517

METHOD OF ANTI-CORROSIVE PROTECTION OF SILICON CARBIDE PRODUCTS

Felicjan J. Biolik, and Zygmunt A. Morys, both of Katowice, Poland, assignors to Biuro Projektow Przemyslu Metali Niezelaznych BIPROMET, Katowice, Poland

Continuation of Ser. No. 338,143, Jan. 8, 1982, abandoned. This application Jul. 31, 1984, Ser. No. 635,487
Claims priority, application Poland, Jul. 7, 1979, 216964
Int. Cl.[4] B01J *11/18*
U.S. Cl. 422—40 **2 Claims**

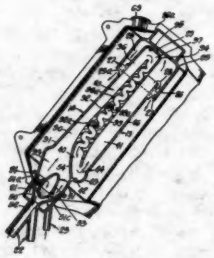


1. A method of protecting against corrosion a solid body of silicon carbide submerged in a high-temperature molten bath, comprising the step of placing a separate, unconnected, oxygen-tight shield over at least a part of the submerged surface of said body, said shield consisting of a separate piece of porcelain, steatite, metal or alloyed steel.

4,623,518
BLOOD OXYGENATOR

Donald A. Raible, Santa Ana, Calif., assignor to Baxter-Travenol Laboratories, Inc., Deerfield, Ill.

Continuation of Ser. No. 559,395, Dec. 8, 1983, abandoned, which is a continuation of Ser. No. 430,520, Sep. 30, 1982, abandoned, which is a continuation of Ser. No. 257,577, Apr. 27, 1981, abandoned, which is a division of Ser. No. 689,971, May 26, 1976, Pat. No. 4,268,476, which is a continuation-in-part of Ser. No. 584,464, Jun. 6, 1975, abandoned. This application Aug. 12, 1985, Ser. No. 765,174
Int. Cl.[4] A61M 1/14
U.S. Cl. 422—46 8 Claims



1. A method of oxygenating blood which method comprises forming bubbles in blood with an oxygen-rich gas in a bubble-type blood oxygenator which oxygenator contains a bubble column, a portion of said column having a serpentine passageway formed therein to promote secondary flow of blood bubbles passing therethrough, said serpentine passageway comprising a pair of undulate walls, each wall having a continuous series of projecting sections oriented into the serpentine passageway, said sections on said undulate walls forming a plurality of opposing sets of protrusions, said protrusions from said opposing sets being offset from each other to form a substantially unrestricted passageway therethrough.

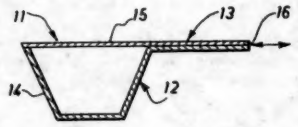
3. A method of oxygenating blood which method comprises forming bubbles in blood with an oxygen-rich gas in a bubble-type blood oxygenator having therein a bubble column having a first end and a second end, said bubble column being provided with at least one segment having a serpentine passageway formed therein to promote secondary flow of blood bubbles passing therethrough, said serpentine passageway comprising a pair of undulate walls, each wall continuous series of arcuate sections, said sections on said undulate walls forming a plurality of opposing sets of spaced-apart protrusions extending into the serpentine passageway, each protrusion from said opposing sets being offset from each other to form a substantially unrestricted passageway therethrough.

5. A method of oxygenating blood which method comprises forming bubbles in blood with an oxygen-rich gas in a bubble-type oxygenator having therein a bubble column having a first end and a second end, said bubble column being provided with a plurality of segments in end-to-end relationship, at least one of said segments having a serpentine passageway formed therein to promote secondary flow of blood bubbles passing therethrough, said passageway comprising a pair of undulate walls, each wall having a continuous series of arcuate sections with a plurality of turns so that said blood bubbles are continuously rotated throughout their passage through said passageway.

4,623,519
CELL FOR ANALYSIS DEVICE, TO COLLECT A FRACTION OF A LIQUID SAMPLE FOR REACTION AND ANALYSIS

Bruno Cornut, Montardon; Claude Chambu, Billere, and Jean-Louis Seris, Jurancon, all of France, assignors to Societe Nationale Elf Aquitaine, Courbevoie, France

Filed Jul. 2, 1984, Ser. No. 626,749
Claims priority, application France, Jul. 27, 1983, 83 12425
Int. Cl.[4] G01N 21/07, 21/75, 31/00
U.S. Cl. 422—72 2 Claims

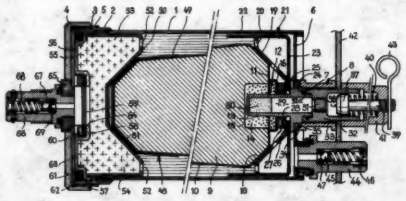


1. A rotor for a fractionating and observation cell for a liquid analysis device comprising: a central distribution container for a liquid, a plurality of fractionating cells on the periphery of the rotor, each cell being connected to the container by a liquid feed and gas evacuation duct wherein the cells and duct are formed of molded plastic pieces, each liquid feed and gas evacuation duct comprises a space between two substantially planar plastic pieces which are welded to each other by two welding seams, the welding seams forming the edges of said duct, and wherein the portions of said pieces that comprise the duct are left rough from molding.

4,623,520
CHEMICAL OXYGEN GENERATOR WITH A LOW CONTENT OF IMPURITIES

Jean Robinet, Balma, France, assignor to Etablissements Ruggieri, Paris, France

Filed Jan. 23, 1985, Ser. No. 694,181
Claims priority, application France, Jan. 23, 1984, 84 01004
Int. Cl.[4] A62B 7/08
U.S. Cl. 422—126 8 Claims

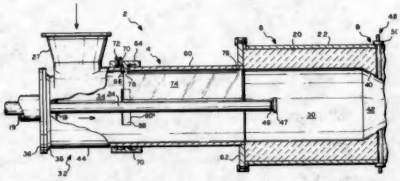


1. In an oxygen generator comprising casing means, (1, 10), a block of oxygen generating material (9) disposed within said casing means, a primer (8) for initiating said oxygen generating material, manually controlled means (37, 43) for actuating said primer, and an outlet valve (66) in said casing means for generated oxygen, the improvements characterized by: said primer comprising a thermal primer, and a thermally transmissive but gas impervious screen (13) disposed to separate the thermal primer from the oxygen generating material and thus prevent gaseous impurities produced by the primer from reaching the outlet valve.

4,623,521
CARBON BLACK REACTOR

Mark L. Gravley, and Mark E. Kertok, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 30, 1985, Ser. No. 781,617
Int. Cl.[4] C09C *1/48*
U.S. Cl. 422—156 **11 Claims**



1. An apparatus for altering the flow of fluid through a conduit said apparatus comprising:

(a) a cylindrical conduit suitable for conducting fluid flow therethrough, said conduit having an inside and an outside surface,

(b) at least one sleeve means fitted with a pressure tight seal around said outside surface of said conduit, and

(c) at least one flexible vane means within said conduit, each one of said vane means comprising a flexible strip with one edge of said strip aligned adjacent to and lengthwise along said conduit, one terminus end of said edge attached to an inside surface of said sleeve through an opening in a circumferentially wall of said conduit, said opening of sufficient dimensions so that rotation of said sleeve means about said conduit alters the position of said vane means within said conduit thereby affecting the flow of fluid through said conduit, and another terminus end of said strip fixed to the inside surface of said conduit, said strip extending radially inwardly from said edge into said conduit.

4,623,522
EXTRACTION OF SILVER AND PALLADIUM METALS FROM AQUEOUS SOLUTIONS USING TERTIARY PHOSPHINE SULFIDES

William A. Rickelton, Niagara Falls, Canada, assignor to American Cyanamid Company, Stamford, Conn.

Filed Jan. 5, 1983, Ser. No. 455,680
Int. Cl.[4] C01G *55/00, 5/00*
U.S. Cl. 423—22 **18 Claims**

1. A process for the extraction of silver or palladium metal values from an aqueous solution of sulfuric acid, said process comprising: (1) contacting said solution with a tertiary phosphine sulfide compound represented by the formula:

wherein R^1, R^2 and R^3 are each independently selected from alkyl of at least two carbon atoms, cycloalkyl, aryl, aralkyl, substituted aryl and substituted aralkyl; (2) separating the resulting tertiary phosphine sulfide-silver or tertiary phosphine sulfide-palladium complex thereform; and (3) recovering said silver or palladium metal values from said complex with a suitable stripping agent.

4,623,523
METHOD FOR REDUCTION OF SO_2 EMISSION FOR FOSSIL FIRED BOILER

Jack Z. Abrams, and Robert M. Sherwin, both of San Rafael, Calif., assignors to Bechtel International Corporation, San Francisco, Calif.

Continuation-in-part of Ser. No. 474,226, Mar. 11, 1983, abandoned, which is a continuation-in-part of Ser. No. 349,728, Feb. 18, 1982, Pat. No. 4,388,283, which is a continuation-in-part of Ser. No. 181,315, Aug. 25, 1980, abandoned, which is a continuation of Ser. No. 406, Jan. 2, 1979, Pat. No. 4,426,245. This application Mar. 18, 1985, Ser. No. 712,485
Int. Cl.[4] C01B *17/00*
U.S. Cl. 423—242 **13 Claims**

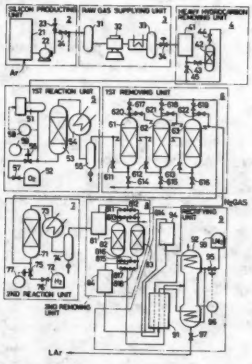
1. A method for removing sulfur dioxide from a sulfur dioxide-containing flue gas comprising:

injecting small particles of an aqueous dispersion of material selected from the group consisting of pressure hydrated lime and pressure hydrated dolomitic lime into a confined zone within a flue gas stream flowing in a duct in an amount sufficiently large to reduce the sulfur dioxide content of said flue gas to a level equivalent to between 10% and 90% of the original sulfur dioxide content but sufficiently small so that the aqueous dispersion is completely dried within within the confined zone, in a stoichiometric ratio to said sulfur dioxide of not larger than 1.5, wherein said confined zone is spaced-apart from the inside walls of the duct and completely dry.

4,623,524
PROCESS AND APPARATUS FOR RECOVERING INERT GAS

Kazuo Someya; Osamu Kita, both of Kudamatsu, and Masaomi Tomomura, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 8, 1985, Ser. No. 699,543
Int. Cl.[4] B01D *53/36*
U.S. Cl. 423—245 **17 Claims**



1. A process for recovering an inert gas, comprising:

a first reaction step of adding an amount of oxygen to a raw gas containing at least a carbonaceous combustible component and an inert gas in a high concentration to react the combustible component in said raw gas thereby forming a first gaseous product containing the inert gas, carbon dioxide and moisture, said amount of oxygen being larger than the minimum amount needed for complete combustion of the carbonaceous combustible component;

a first removing step of removing at least said carbon dioxide in the first gaseous product formed in said first reaction step;

a second reaction step of adding an amount of hydrogen to

the first gaseous product remaining after said first removing step to react the oxygen remaining in said first gaseous product with said hydrogen thereby forming a second gaseous product containing said inert gas and moisture, said amount of hydrogen being larger than the minimum amount needed to completely react said oxygen remaining in said first gaseous product;

a second removing step of removing the moisture in the second gaseous product which is obtained from said second reaction step; and

a refining step of removing remaining impurities, including hydrogen, from the second gaseous product remaining after said second removing step and recovering said inert gas.

4,623,525

STABILIZING COMPLEX FOR POLY(DICHLOROPHOSPHAZENE)

William L. Hergenrother, Akron; John W. Fieldhouse, Mogadore, and Adel F. Halasa, Bath, all of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Jan. 7, 1985, Ser. No. 689,110

Int. Cl.[4] C01B *25/10*

U.S. Cl. 423—275 **6 Claims**

1. A poly(dichlorophosphazene) polymer solution comprising a stabilization effective amount of at least one tertiary amine and at least one chloro-substituted compound selected from the group consisting of: R_nSiCl_{4-n}; Rphd $nGeCl_{4-n}$; R_nSnCl_{4-n} and R_nTiCl_{4-n} wherein n is 0, 1, 2 or 3 and when $n \leqq 1$, R represents one or more identical or different groups selected from C_1–C_8 alkyl or substituted or unsubstituted aryl groups.

4,623,526

PROCESS FOR THE PREPARATION OF A CRYSTALLINE TITANOBOROSILICATE

Kee K. Lam Shang Leen, Ottawa, Canada, assignor to Centre de Recherche Industrielle du Quebec, Quebec, Canada

Continuation-in-part of Ser. No. 411,621, Aug. 26, 1982, Pat. No. 4,519,998. This application Mar. 29, 1985, Ser. No. 717,662

The portion of the term of this patent subsequent to May 28, 2002, has been disclaimed.

Int. Cl.[4] C01B *35/10*

U.S. Cl. 423—277 **4 Claims**

1. A method for preparing a crystalline titanoborosilicate molecular sieve material having a composition in terms of mole ratios of oxides as follows:

$$0.9 \pm 0.2[xR_2O + (1-x)M_{2/n}O]:aTiO_2:bB_2O_3:ySiO_2:zH_2O$$

wherein R is an alkylammonium cation, M is at least one cation of valence n selected from the group consisting of alkali metal or alkaline earth metal, a is greater than zero but smaller than 1, b is greater than zero but smaller than 1, such that $a+b=1$, y is a value of at least 8 up to 500, z is between 0 and 100 and x is a value greater than zero but less than 1, said material being further characterized by an X-ray diffraction pattern comprising the following diffraction lines and their relative intensities:

Interplanar spacing d (A)	Relative intensity
11.1 ± 0.2	W–S
10.05 ± 0.2	W–MS
5.18 ± 0.05	VW–M
4.11 ± 0.05	M–VS
3.83 ± 0.05	M–VS
3.71 ± 0.05	MS–VS
3.64 ± 0.05	MS–S
3.31 ± 0.05	W–S
2.98 ± 0.02	VW–M
2.50 ± 0.02	VW–M

-continued

Interplanar spacing d (A)	Relative intensity
1.99 ± 0.02	VW–M

which method comprises:

(a) providing a reaction mixture comprising:

(1) a titanium-oxide containing material and an alkali tetrahydroborate,

(2) sodium silicate,

(3) an alkylammonium cation or a precursor thereof, and,

(4) water, and

(b) maintaining said reaction mixture under alkaline pH, at a reaction temperature between 25° C. to about 300° C., and for a time sufficient to effect formation of said crystalline titanoborosilicate under autogeneous pressure at the reaction temperature, the composition of the reaction mixture in (a) being such as to provide mole ratios in the following ranges:

$R_2O/(R_2O + M_{2/n}O)$	0.2–0.97
H_2O/OH^-	10–4000
SiO_2/B_2O_3	8–4000
SiO_2/TiO_2	8–400.

4,623,527

CRYSTALLINE SILICOPHOSPHOALUMINATE (MCM-10)

Eric G. Derouane, Namur, Belgium; Ernest W. Valyocsik, Yardley, Pa., and Roland von Ballmoos, Pennington, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 562,909, Dec. 19, 1983, abandoned. This application Dec. 21, 1984, Ser. No. 685,186

Int. Cl.[4] C01B *15/16, 33/28*

U.S. Cl. 423—306 **16 Claims**

1. A synthetic crystalline material having a composition as follows:

$$vA:M_{x/m}{}^{m+}:(AlO_2)_{1-y}{}^-:(PO_2)_{1-x}{}^+:(SiO_2)_{x+y}:N_{y/n}{}^{n-}:wH_2O$$

wherein M is a cation of valence m, N is an anion of valence n, A is occluded organic directing agent and solvent, v is the number of moles of A, w is the number of moles of H_2O and x and y are numbers of from greater than -1 to less than $+1$ which satisfy the relationships:

(1) if x is 0, then y is not 0,

(2) if y is 0, then x is not 0,

(3) if the atomic ratio of Al/P is greater than 1, then $x+y$ is greater than 0.001 and $y+0.6x$ is less than 0.4, and

(4) if the atomic ratio of Al/P is less than 1, then $x+y$ is greater than 0.001 and $x+0.5y$ is less than 0.5,

which, as synthesized, exhibits a characteristic X-ray diffraction pattern as shown in Table 1-A of the specification.

4,623,528

RECOVERY OF FLUORINE FROM WASTE GASES

James C. Barber, Florence, Ala., assignor to James C. Barber and Associates, Inc., Florence, Ala.

Filed Jun. 17, 1985, Ser. No. 745,648

Int. Cl.[4] C01B *25/01*

U.S. Cl. 423—320 **14 Claims**

1. A process for the production of wet-process phosphoric acid comprised of the following steps:

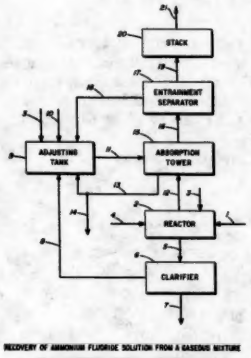
(a) digesting ground phosphate ore with sulfuric acid;

(b) filtering slurry from step (a);

(c) discarding filter cake from step (b);

(d) collecting filtrate from step (b) and recovering said filtrate as filter-grade wet-process phosphoric acid;

(e) collecting fluorine-laden air from digestion and filtration in steps (a) and (b);
(f) treating fluorine-laden air from step (e) with an aqueous alkaline substance;
(g) precipitating silica from aqueous mixture formed in step (f);
(h) separating silica precipitated in step (g);
(i) discarding silica separated in step (h);
(j) pumping clarified solution prepared in step (h) to a vessel;
(k) adding an acid substance to vessel in step (j);
(l) adding an alkaline substance to vessel in step (j);
(m) treating air from step (f) in an absorption tower wherein solution from step (j) is the scrubbing medium;



RECOVERY OF AMMONIUM FLUORIDE SOLUTION FROM A GASEOUS MIXTURE OF SILICON TETRAFLUORIDE AND HYDROGEN FLUORIDE

(n) recycling solution from absorption tower in step (m) to vessel in step (j);
(o) bleeding off a stream of solution from step (n);
(p) treating air from step (m) in an entrainment separator;
(q) adding collected entrained material from step (p) to vessel in step (j);
(r) discharging air from step (p) to the atmosphere;
(s) adding bleedoff from step (o) to process for making orthophosphate suspension fertilizer;
(t) concentrating filter-grade wet-process phosphoric acid from step (d) in a vacuum evaporator; and
(u) collecting concentrated filtrate in step (t) as merchant-grade wet-process phosphoric acid.

4,623,529

METHOD OF MAKING A ZEOLITE OF THE CLINOPTILOLITE TYPE BY SEEDING

Robert N. Sanders, Baton Rouge, and Sebastian M. Laurent, Greenwell Springs, both of La., assignors to Ethyl Corporation, Richmond, Va.

Filed Sep. 16, 1985, Ser. No. 776,752
Int. Cl.[4] C01B *33/28*
U.S. Cl. 423—328 **14 Claims**

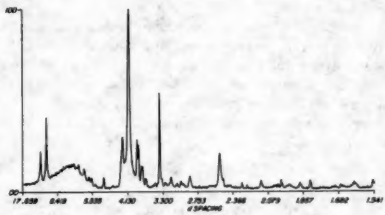
1. A method of producing a synthetic crystalline zeolite of the clinoptilolite type as indicated by diffraction data as set forth in table "A", comprising mixing a finely ground solid amorphous silica and an alumina source, caustic and a seed amount of clinoptilolite to provide a reaction mixture of $(2.1\pm0.5)Na_2OAl_2O_3\,(10.0\pm2.0)SiO_2\,(110.1\pm50.0)H_2O$, heating the mixture to a temperature of about 100° C.–200° C. for up to about 240 hours, thereby forming a synthetic crystalline zeolite of said clinoptilolite type, and recovering said synthetic crystalline zeolite of said clinoptilolite type.

4,623,530

CRYSTALLINE MAGNESIA-SILICA COMPOSITES AND PROCESS FOR PRODUCING SAME

Leonard A. Cullo, Hempfield Township, Westmoreland County; Edward F. Restelli, Jr., Oakmont Borough, Allegheny County, and Francis J. Shiring, III, Hampton Township, Allegheny County, all of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Feb. 20, 1985, Ser. No. 703,568
Int. Cl.[4] C01B *33/24, 33/28;* B01J *21/08;* C07C *2/68*
U.S. Cl. 423—331 **8 Claims**



1. Method of making a magnesium-containing silica composition consisting essentially of
(1) forming an aqueous reaction mixture consisting essentially of about 0.05 to about 0.225 mole % magnesium salt, about 0.22 to about 0.24 mole % tetrapropyl ammonium halide templating material, about 0.5 to 1 mole % alkali metal oxide, about 2 to 2.5 mole % SiO_2 and about 3 to about 3.5 mole % alakli metal halide, in deionized water to form 100 mole %, in a container to form a precipitate,
(2) stirring the reaction mixture of step (1) and heating it at a temperature of about 175° C. to about 195° C. to form a crystallized product, and
(3) calcining the product of step (2).

4,623,531

PROCESS FOR PRODUCING SILANE

Wolfgang Porcham, Mils, Austria, assignor to D. Swarovski & Co., Wattens, Austria

Filed Mar. 1, 1985, Ser. No. 707,039
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1984, 3409172
Int. Cl.[4] C01B *33/04*
U.S. Cl. 423—347 **19 Claims**

1. A process for producing silane comprising reacting silicon tetrafluoride with magnesium hydride in a melt having a composition comprising members selected from the group consisting of alkali and alkaline earth halides in the presence of hydrogen, said melt having a temperature sufficient for said reacting to proceed and said hydrogen exerting a hydrogen partial pressure which is sufficient to prevent the magnesium hydride from disassociating at the temperature of the melt.

17. A process in accordance with claim **1**, wherein the composition of the melt is maintained essentially unchanged during said step of reacting.

4,623,532

CATALYSTS FOR SYNTHESIS OF AMMONIA

Mehmet N. Ozyagcilar, Ac: Bademi, Turkey; and Milton W. Davis, Jr., Columbia, S.C., assignors to University of South Carolina, Columbia, S.C.

Continuation of Ser. No. 413,522, Aug. 31, 1982, abandoned, which is a continuation of Ser. No. 162,314, Jun. 23, 1980, abandoned, which is a continuation of Ser. No. 936,455, Aug. 24, 1978, abandoned, which is a continuation of Ser. No. 799,099, May 20, 1977, abandoned. This application Jun. 30, 1983, Ser. No. 509,973

Int. Cl.[4] C01C *1/04*

U.S. Cl. 423—362 **7 Claims**

1. A method of making ammonia which comprises the step of passing a feed mixture containing gaseous molecular nitrogen and hydrogen over a catalyst comprised of a binary alloy of iron and titanium wherein the catalyst is activated before being exposed to said reactant gases by exposure to gaseous hydrogen to remove impurities from the surface of the catalyst and to form at least one metal hydride.

4,623,533

DESULFURIZATION OF H_2S-CONTAINING GASES

Franz J. Broecker, Ludwigshafen; Hans Gettert, Gross-Sachsen, and Knut Kaempfer, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 648,046, Sep. 7, 1984, abandoned. This application Feb. 3, 1986, Ser. No. 825,626

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1983, 3332563

Int. Cl.[4] B01D *53/36;* C01B *17/04*

U.S. Cl. 423—573 G **9 Claims**

1. A process for the desulfurization of an H_2S-containing gas by direct catalytic oxidation of the H_2S to elemental sulfur with an oxygen-containing gas at temperatures from 180° to 400° C., wherein the catalyst used contains from 0.1 to 25% be weight of nickel oxide, from 0 to 10% by weight of aluminum oxide and 65 to 99.9% by weight of titanium dioxide, wherein said titanium dioxide functions both catalytically and as a carrier material.

4,623,534

METHOD FOR PRODUCING AMMONIUM PARATUNGSTATE

Richard A. Scheithauer; Clarence D. Vanderpool, and Michael J. Miller, all of Towanda, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Mar. 21, 1985, Ser. No. 714,327

Int. Cl.[4] C01G *41/00*

U.S. Cl. 423—593 **6 Claims**

1. A method for producing relatively pure crystalline ammonium paratungstate from an impure tungsten solution, said method comprising:

(a) adding hexamethylenetetramine to said tungsten solution in an amount sufficient to form a tungsten hexamethylenetetramine product;

(b) adjusting the pH of the resulting hexamethylenetyetramine treated solution with a mineral acid to from about 1.0 to about 2.0 to form a first precipitate of said product containing essentially all of the tungsten and a first mother liquor;

(c) separating said first precipitate from said first mother liquor;

(d) forming a first slurry of said first precipitate in water and thereafter adjusting the pH of said first slurry to from about 7.0 to about 8.5 with ammonia to dissolve said first precipitate and form a first ammoniacal solution of the tungsten hexamethylenetetramine product;

(e) adjusting the pH of said first ammoniacal solution to from about 1.0 to about 2.0 with a mineral acid to form a second precipitate of said product and a second mother liquor;

(f) separating said second precipitate from said second mother liquor;

(g) forming a second slurry of said second precipitate in a second ammoniacal solution said solution having a concentration of from about 10% to about 20% by weight of ammonia, said solution supplying sufficient ammonia to subsequently form ammonium paratungstate;

(h) evaporating said second slurry at from about 90° C. to about 100° C. to a fraction of its original volume to form a third precipitate of relatively pure crystalline ammonium paratungstate and a third mother liquor containing essentially all of said hexamethylenetetramine; and

(i) separating said third precipitate from said third mother liquor.

4,623,535

LEUKOTRIENE ANTAGONISTS

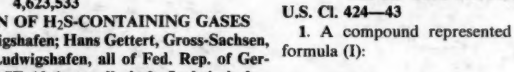
Carl D. Perchonock, Philadelphia, Pa., assignor to SmithKline Beckman Corporation, Philadelphia, Pa.

Filed Jan. 19, 1984, Ser. No. 572,022

Int. Cl.[4] C07C *149/20;* A61K *31/19, 31/205*

U.S. Cl. 424—43 **14 Claims**

1. A compound represented by the following structural formula (I):



(I)

wherein m and n are independently 1, 2 or 3 and R_1 is an alkyl radical containing 8 to 13 carbon atoms or a pharmaceutically acceptable salt thereof formed with ammonia, an organic amine or an alkali metal base.

10. A pharmaceutical composition for inhibiting the symptoms of asthma in subjects in need of such inhibition comprising a pharmaceutical carrier or diluent and a nontoxic amount sufficient to produce said inhibition of a compound of claim **1**.

4,623,536

SODIUM BICARBONATE CONTAINING TOOTHPASTE

Anthony E. Winston, East Brunswick; Raymond Brown, Bridgewater; Norman Usen, Marlboro, and Anthony Ansaldi, Mt. Arlington, all of N.J., assignors to Church & Dwight Co., Inc., Piscataway, N.J.

Filed Jun. 13, 1985, Ser. No. 744,497

Int. Cl.[4] A61K *7/16, 7/18*

U.S. Cl. 424—49 **10 Claims**

1. In a toothpaste containing an abrasive, a humectant and a thickening agent, the improvement comprising sodium bicarbonate as the sole abrasive, the sodium bicarbonate being incorporated in the toothpaste in an amount of at least 60% by weight, and at least 30% by weight of the sodium bicarbonate having a particle size of less than 25 microns.

4,623,537

ORAL HYGIENE COMPOSITIONS

Nancye D. Kearns, Ossining, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 20, 1984, Ser. No. 622,491

Int. Cl.[4] A61K *7/16*

U.S. Cl. 424—49 **9 Claims**

1. A oral hygiene composition comprising 0.01% to 20% weight percent of an oral hygiene active component in a liquid mouthwash, gelular gel, or semi-solid paste vehicle, said vehicle comprising about 5 to 50 weight percent of polyfunctional polyethylene glycol having a weight average molecular weight of about 800 to 1500 and from 3 to about 8 hydroxyl groups said polyethylene glycol being free of the bitter taste and pronounced bitter after taste typically imparted by the normally liquid lower molecular weight polyethylene glycols.

4,623,538

FLAVORING WITH DITHIOETHERS OF 2-PHENYL-2-ALKENALS

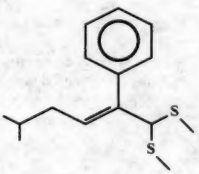
Alan O. Pittet, Atlantic Highlands; Ranya Muralidhara, Fair Haven; Kevin P. Miller, Middletown, and Domenick Luccarelli, Jr., Neptune, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 726,352, Apr. 23, 1985, Pat. No. 4,571,344. This application Oct. 25, 1985, Ser. No. 791,383

Int. Cl.[4] A23L *1/226*

U.S. Cl. 424—52 **1 Claim**

1. A process for augmenting or enhancing the aroma or taste of a chewing gum, toothpaste or medicinal product comprising the step of adding to said chewing gum, toothpaste or medicinal product from 0.1 parts per million up to about 250 parts per million of the compound having the structure:



4,623,539

NUTRIENT BARRIER POLYSACCHARIDE COMPOSITIONS AND METHOD OF USE

Deger C. Tunc, 6 Springfield Rd., East Brunswick, N.J. 08816

Division of Ser. No. 464,024, Feb. 4, 1983, Pat. No. 4,520,017. This application Mar. 25, 1985, Ser. No. 716,473

The portion of the term of this patent subsequent to May 28, 2002, has been disclaimed.

Int. Cl.[4] A61K *31/72, 31/725;* **C08B** *37/00, 37/08*

U.S. Cl. 424—79 **22 Claims**

1. An oral composition of matter for coating the small intestine of a mammal comprising: a polymeric material that is capable of forming a nutrient barrier in the pH environment of 5.5 to 8.5 of the small intestine, said polymeric material having atoms containing polarizable electrons thereon, said atoms being selected from the group consisting of oxygen, nitrogen, sulfur in combination with a divalent cation said divalent cation is selected from the group consisting of Ca^{++}, Mg^{++}, Zn^{++} and Ba^{++} wherein the ratio of said atom containing polarizable electrons thereon to said divalent cation is in the range of 7.7 to 1 or <1 in a pharmaceutically acceptable carrier.

20. A method of reducing the amount of nutrient absorption in the small intestine of a mammal by administering to said mammal an effective amount of the composition of claim 1.

4,623,540

CONTROLLED RELEASE INSECTICIDE COMPOSITION

Costanza: John R., N. Plainfield, N.J., and Henry A. Terwedow, Glen Ellyn, Ill., assignors to Les Produits Organiques du Santerre-Orsan S.A. ("Orsan"), France

Filed Jul. 9, 1981, Ser. No. 281,818

Int. Cl.[4] A01N *57/00*

U.S. Cl. 424—81 **9 Claims**

1. A controlled release dual-mode insecticide composition effective against insects as a contact or stomach poison in the form of an emulsifiable concentrate which comprises:

(a) about 1 to about 40% of Imidan,

(b) an amount of film-forming resin effective to controllably release said Imidan comprising about 1 to about 30% of a polymer selected from the group consisting of acrylic resins having an acrylic/acrylate monomer content of about 30 to about 100 weight % of said polymer and styrene homopolymers,

(c) about 1 to about 10% of a cationic, anionic or nonionic surfactant,

(d) an aliphatic organic solvent in which the resin and the surfactant are substantially soluble but the Imidan is substantially insoluble wherein the weight ratio of the solvent to resin is from 1:1 to 10:1.

4,623,541

PRODUCTION OF PURIFIED PORCINE IMMUNOGLOBULINS

James I. Elliot, Ottawa; Gordon E. Timbers, Nepean; H. Wayne Modler, Kemptville, and Robert W. Allen, Carp, all of Canada, assignors to Candian Patents and Development Limited, Ottawa, Canada

Filed Jun. 25, 1985, Ser. No. 748,671

Claims priority, application Canada, Jun. 26, 1984, 457458

Int. Cl.[4] A61K *35/16, 39/395*

U.S. Cl. 424—85 **15 Claims**

1. A method of continuous production of an animal feed component containing purified immunoglobulins, the method comprising the sequential steps of:

(a) adding an anti-coagulant to collected blood to prevent the formation of fibrin;

(b) centrifugally removing from the blood the cellular fractions;

(c) adding ammonium sulfate to the remaining plasma to obtain a first stage ammonium sulfate saturation of approximately 20% to 30% to induce fibrin precipitation;

(d) removing the precipitated fibrin by subjecting the plasma to continuous centrifugation;

(e) increasing the ammonium sulfate saturation of the remaining defibrinated plasma to a second stage ammonium sulfate range of approximately 35% to 50%;

(f) subjecting the defibrinated plasma to further continuous centrifugation to separate the soluble albumins from the precipitated globulins;

(g) collecting the continuously discharged immunoglobulin-containing sludge from this centrifugation step and adding water to redissolve therein the immunoglobulins;

(h) subjecting the aqueous immunoglobulin solution to an ion depletion process to remove a major portion of the ammonium sulfate; and

(i) blending the purified immunoglobulin material from step (h) while still in aqueous form with a suitable protein source in a ratio appropriate for the daily intake of an animal to which it is to be fed.

4,623,542

HIGH STABILITY, HIGH FLAVOR, BREAKFAST PASTRY AND METHOD FOR PREPARING THE SAME

Glenn Wallin, Minneapolis; Diane Rosenwald, Brooklyn Park; James Citti, and Samuel Yong, both of Minneapolis, all of Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Continuation-in-part of Ser. No. 355,271, Mar. 5, 1982. This application Feb. 24, 1983, Ser. No. 467,699

Int. Cl.[4] A21D *13/08*

U.S. Cl. 426—94 **38 Claims**

1. A high moisture, shelf stable and product stable filling, especially for toaster breakfast pastries, comprising: a flavored pastry filling material having a viscosity from about 20,000 cps to about 60,000 cps, a starch content from about 3.5% by weight to about 8% by weight, a gum content from about 0.15% by weight to about 0.4% by weight, a pH from about 2.8 to about 7.5 a total moisture content from about 30% to about 50% by weight.

4,623,543
LOW-CALORIE CANDIES

Kiyoshi Motegi, Osato, and Kichiro Otani, Tokyo, both of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Aug. 22, 1985, Ser. No. 768,225
Claims priority, application Japan, Aug. 29, 1984, 59-179999
Int. Cl.[4] A23G 3/00
U.S. Cl. 426—103 11 Claims

1. A low-calorie candy, which comprises

(a) a core of 60–90% by weight of concentrated reducing maltose syrup, and at least one ingredient selected from the group consisting of a high intensity sweetening agent, an acidulant, a flavoring agent, and a colorant,

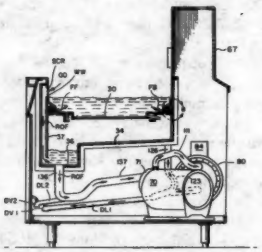
(b) a coating of concentrated reducing maltose syrup, and at least one ingredient selected from the group consisting of a high intensity sweetening agent, an acidulant, a flavoring agent, and a colorant, wherein the viscosity of said syrup is adjusted with water or a thickener and the weight ratio of sugar-coating to core is from about ⅓ to 1/5,

wherein at least one of said core and said coating contains said high intensity sweetening agent.

4,623,544
CONSTANT TEMPERATURE FRYER/COOKER ASSEMBLY

Sidney T. Highnote, Rte. One, Box 91, Rockmart, Ga. 30153

Filed Aug. 3, 1984, Ser. No. 637,573
Int. Cl.[4] G01N 33/02; A23L 1/00; A47J 37/12
U.S. Cl. 426—233 42 Claims



1. A fryer assembly comprising:

a housing;

cooking pan means mounted within said housing for easy removal therefrom;

a sump for a supply of cooking oil

cooking oil dispersing means provided for said pan and connected by pump means to said cooking oil sump;

heat exchanger means in said housing for heating said cooking oil to a predetermined temperature;

thermostat control means in contact with and sensitive to the temperature of the cooking oil;

control means operably connected by writing between said thermostat control means and said heat exchanger means for electrically energizing a firing module of the latter as appropriate when a drop in cooking oil temperature occurs;

said cooking oil dispersing means including a pipe extending substantially around the entire inner circumference of said cooking pan means, with said pipe having dispersing apertures spaced therealong which are at a predetermined preset angle with respect to a lower surface of said cooking pan means to effect a substantial amount of turbulence in the flow of cooking oil into the cooking pan for obtaining a substantially constant temperature of the oil throughout the pan; and

baffle means substantially covering said dispersing pipe and providing a gap between the lower edge of said baffle means and the bottom of said pan for increasing the effectiveness of the turbulent oil flow through the pan as effected by the aforesaid angled dispersing apertures in said pipe.

12. A method of cooking food products of various types comprising the flowing steps:

effecting a flow of heated oil in a cooking apparatus;

passing a portion of said oil through a high efficiency heater for re-heating of same to a predetermined desired cooking temperature;

adding an amount of food product to be cooked to the heated oil in a cooking pan;

sensing the temperature of said oil;

heating the oil by said heater in response to said sensing step to increase the temperature of the oil to said predetermined desired cooking temperature;

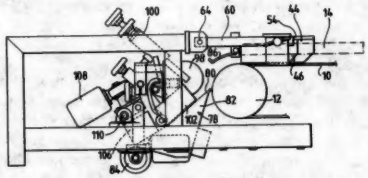
swirling the heated oil being inputted into said cooking pan by forcing same through a plurality if dispersing apertures provided in a dispersing pipe extending substantially around the entire inner circumference of said cooking pan with each aperture being at a predetermined set angle relative to the bottom of said cooking pan; and

further effecting turbulence of the oil being inputted so as to provide a substantially constant temperature thereof by providing baffle means over the apertures in said dispersing pipe.

4,623,545
DOUGH ROLLING METHOD AND APPARATUS WITH AIR-FILM LUBRICATED CHUTE

Josef K. Pivonka, Norwich, England, assignor to Tweedy of Burnley Limited, Burnley, England

Filed Oct. 15, 1985, Ser. No. 787,241
Int. Cl.[4] A21C 3/02
U.S. Cl. 426—502 10 Claims



1. A method of compacting a dough piece in a dough moulding machine comprising: passing the dough piece over a fluidised bed and at the same time squeezing said dough piece between a pair of rollers having their axes disposed substantially at right angles to said fluidised bed.

4,623,546
METHOD FOR MANUFACTURING CRISP RICE

Sanjay H. Holay, Rolling Meadows; James R. Kirkwood, Arlington Heights, and Subodh K. Raniwala, Vernon Hills, all of Ill., assignors to The Quaker Oats Company, Chicago, Ill.

Filed Apr. 1, 1985, Ser. No. 718,574
Int. Cl.[4] A23L 1/18
U.S. Cl. 426—448 7 Claims

1. A method for making a crisp rice product comprising the steps of:

(a) extrusion-cooking a moist mix of ingredients, the ingredients comprising at least about 50% uncooked rice flour on a dry weight basis, in a screw-type extruder, the screw-type extruder comprising an elongated barrel having a feed end and a discharge end and a passageway therebetween and a single elongated screw snugly and rotatably residing within the passageway, the screw having, in a transition section thereof, a non-adhesive, anti-stick coating;

(b) expressing the cooked mix from the extruder through a die under expanding conditions;
(c) cutting the expressed mix into discrete pieces;
(d) drying the cut pieces; and
(e) toasting the dried pieces.

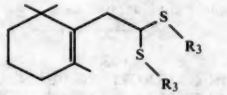
4,623,547

FLAVORING WITH DIALKYLTHIOALKENES, DIALKYLTHIOALKYLCYCLOALKENES AND MONOALKYLTHIOALKENYLCYCLOALKENES

Alan O. Pittet, Atlantic Highlands; Ranya Muralidhara, Fair Haven; Kevin P. Miller, Middletown; Domenick Luccarelli, Jr., Neptune, and Manfred H. Vock, Locust, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 731,919, May 8, 1985, Pat. No. 4,565,707. This application Nov. 21, 1985, Ser. No. 800,550
Int. Cl.[4] A23L *1/226, 1/235, 1/231*
U.S. Cl. 426—535 **4 Claims**

1. A process for augmenting or enhancing the aroma or taste of a foodstuff comprising the step of adding to said foodstuff from about 0.001 up to about 250 ppm of a compound defined according to the genus:



wherein R_3 represents C_1–C_3 alkyl.

4,623,548

METHOD FOR PREPARING EXTRUDED FRIED SNACK PRODUCTS FROM CORN AND OTHER CEREAL FLOURS

Miles J. Willard, 229 N. Llyod Cir., Idaho Falls, Id. 83401

Continuation of Ser. No. 732,909, May 9, 1985, abandoned, which is a continuation of Ser. No. 614,381, May 24, 1984, abandoned, which is a continuation of Ser. No. 384,895, Jun. 4, 1982, abandoned. This application Jan. 21, 1986, Ser. No. 820,831
The portion of the term of this patent subsequent to Nov. 18, 2003, has been disclaimed.
Int. Cl.[4] A21D *10/00*
U.S. Cl. 426—559 **28 Claims**

1. A method for making an extruded expanded fried cereal-based snack product, comprising the steps of:
preparing a dough consisting essentially of:
(a) a low water-absorbing component comprising one or more raw or partially gelatinized cereal flours comprising friom about 15% to about 80%, by weight, of the total solids contained in the dough;
(b) a high water-absorbing component comprising one or more pregelatinized cereal starches or flours or dehydrated potatoes comprising from about 3% to about 40%, by weight, of the total solids in the dough;
(c) a starch component comprising one or more extraneously added ungelatinized starches comprising from about 10% to about 45%, by weight, of the total solids in the dough; and
(d) water mixed with the solids to form a dough in which the moisture content of the dough is from about 40% to about 50%, by weight, of the dough;
extruding a dough piece from the dough; and
frying the dough piece in hot cooking oil to form an expanded fried snack product, the dough piece containing said amounts of the components (a), (b) and (c) and having said 40% to 50% moisture content at the time of frying, the dough piece at the time of frying also containing residual raw starch provided by said amounts of components (a) and (c), component (b) having a substantially greater ability to hold water than component (a) throughout the frying step up until the gelatinization temperature of said residual raw starch is reached, thereby retaining water present in the dough piece sufficiently to combine with said residual raw starch at said gelatinization temperature to cause the residual raw starch to gelatinize and form an expanded fried snack of substantially uniform porosity throughout its cross-section with an expansion from about 1.2 to about 3.0 times the original thickness of the extruded dough piece.

4,623,549

DRY INSTANT FOOD COMPOSITION

Judy L. Katt, Decatur; Carl O. Moore, Rochester, and James E. Eastman, Decatur, all of Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Filed Feb. 20, 1986, Ser. No. 832,094
Int. Cl.[4] A23L *1/187, 1/22*
U.S. Cl. 426—548 **6 Claims**

1. A dry instant mix composition which is capable of dispersing in a cold aqueous medium and hydrating without lumping to produce a smooth textured dessert and which comprises:
(a) from about 50 to 95 percent of a cold water swelling hydroxypropylated granular starch component characterized by (1) a hydroxypropyl substitution level of from about 6 to about 15 percent and (2) a viscosity profile, as measured by the Hydration Rate test using 5.5 percent starch (dsb) in 10° C. water, of less than 1,500 centipoises initially and more than 5,000 centipoises after 5 minutes hydration;
(b) from about 0 to about 40 percent of a non-starch saccharide bulking and/or sweetener agent component selected from the group of mono-, di-, oligo- and polysaccharides; and,
(c) a high intensity sweetener in an amount sufficient to increase the sweetness of said dessert composition.

4,623,550

METHOD FOR PREPARING SHEETED FRIED SNACK PRODUCTS FROM CORN AND OTHER CEREAL FLOURS

Miles J. Willard, P.O. Box 1747, Idaho Falls, Id. 83401

Continuation of Ser. No. 732,910, May 9, 1985, abandoned, which is a continuation of Ser. No. 614,382, May 24, 1984, abandoned, which is a continuation of Ser. No. 384,897, Jun. 4, 1982, abandoned. This application Jan. 21, 1986, Ser. No. 820,830
The portion of the term of this patent subsequent to Nov. 18, 2003, has been disclaimed.
Int. Cl.[4] A21D *10/00*
U.S. Cl. 426—559 **24 Claims**

1. A method for making a sheeted expanded fired cereal-based snack product, comprising the steps of:
preparing a dough consisting essentially of:
(a) a low water-absorbing component comprising one or more raw or partially gelatinized cereal flours comprising from about 20% to about 80%, by weight, of the total solids contained in the dough;
(b) a high water-absorbing component comprising one or more pregelatinized cereal starches or flours or dehydrated potatoes comprising from about 10% to about 35%, by weight, of the total solids in the dough;
(c) a starch component comprising one or more extraneously added ungelatinized starches comprising from about 10% to about 45%, by weight, of the total solids; and
(d) water mixed with the solids to form a dough in which the moisture content of the dough is from about 35% to about 50%, by weight, of the dough;
sheeting the dough and cutting a dough piece from the dough; and
frying the dough piece in hot cooking oil to form an expanded fried snack product, the dough pieces containing said

amounts of the components (a), (b), and (c) and having said 35% to 50% moisture content at the time of frying, the dough piece at the time of frying also containing residual raw starch provided by said amounts of components (a) and (c), component (b) having a substantially greater ability td hold water than component (a) throughout the frying step up until the gelatinization temperature of said residual raw starch is reached, thereby retaining water present in the dough piece sufficiently to combine with said residual raw starch at said gelatinization temperature to cause the residual raw starch to gelatinize and form an expanded fried snack of substantially uniform porosity throughout its cross-section with an expansion from about 1.4 to about 2.5 times the original thickness of the sheeted and cut dough pieces.

4,623,551
METHOD FOR THE FABRICATION OF A CHEESE FOAM

Claude Giddey, Geneva, and Georges Dové , Carouge, both of Switzerland, assignors to Battelle Memorial Institute, Geneva, Switzerland

Filed Jul. 11, 1985, Ser. No. 753,996

Claims priority, application Switzerland, Jul. 17, 1984, 3465/84

Int. Cl.[4] A23C *19/09, 19/093*

U.S. Cl. 426—564 **6 Claims**

1. A method for fabricating a cheese foam from pasteurized or sterilized cheese, wherein the foam has an aerated cohesive structure of long storage stability, constituted by the presence of air or gas micro-bubbles homogeneously dispersed therein, comprising the steps of:

(a) preparing an aqueous solution or suspension of cheese dough which has a temperature between 40° and 80° C., and a viscosity in said temperature range of 500 to 50000 cP;

(b) preparing an emulsion of air or non-toxic gas at room temperature by beating the gas into an aqueous 10 to 20% by weight albumin solution so as to achieve a gas/liquid emulsion of the order of 10/1 to 20/1 v/v; and

(c) adding 0.5 to 2 volumes of the emulsion obtained in (b) to 1 volume of the aqueous solution of cheese dough prepared in (a), at a temperature between 40° and 8020 C., and imparting thereto laminar non-turbulent movement such that the components unite progressively together into a homogeneous mixture, the structure of which stabilizes itself by coagulation of the albumin.

4,623,552
PUDDING COMPOSITION AND PROCESS FOR PREPARING PUDDINGS THEREFROM

Harold Rapp, Fairfield, Conn., assignor to Nabisco Brands, Inc., Parsippany, N.J.

Filed Jun. 19, 1985, Ser. No. 746,366

Int. Cl.[4] A23L *1/04*

U.S. Cl. 426—575 **8 Claims**

1. A process for preparing a room-temperature sterile packaged pudding product having textural and organoleptic properties similar to those exhibited by a homemade cooked-starch pudding, and which exhibits long-term stability against microbial contamination, comprising the steps of:

(a) preparing an aqueous admixture comprised of a sugar component, a starch component, milk solids, and a material selected from the group consisting of kappa-carrageenan and mixtures of kappa-carrageenan and iota-carrageenan in amounts effective to form a pudding;

(b) heating said admixture to a temperature in the range of from about 270° F. to about 300° F. to effect starch solubilization therein and sterilization thereof;

(c) cooling said sterilized admixture to a temperature below about 130° F. while agitating said admixture; and

(d) packaging said cooled product under aseptic conditions in a suitable container composed of thermoplastic material.

4,623,553
METHOD OF PRODUCING A BONE SUBSTITUTE MATERIAL

Peter Ries, Reinach; Frank Baümgart, Grenchen, both of Switzerland, and Heinz Mittelmeier, Homburg-Schwarzenbach, Fed. Rep. of Germany, assignors to Oscobal AG, Switzerland

Filed Jun. 4, 1985, Ser. No. 741,170

Claims priority, application European Pat. Off., Jun. 12, 1984, 84810288.5

Int. Cl.[4] A01N *1/02;* **A61F** *1/00, 1/24, 5/04*

U.S. Cl. 427—2 **13 Claims**

1. A method of producing a bone substitute material from collagen and a mineral component, said mineral component comprising apatite and/or hydroxyapatite and/or calcium phosphate ceramics, wherein an aqueous solution or a dispersion of cleaned collagen is mixed with a cross-linking agent of a quantity so as to result only in a partial cross-linking, whereby the quantity of said cross-linking agent is chosen such that the collagen is cross-linked only to such a degree that it retains its resorbability and its adsorptivity vis-a-vis bodily fluids and that the material does not generate undesirable side effects, and the mixture is lyophilized.

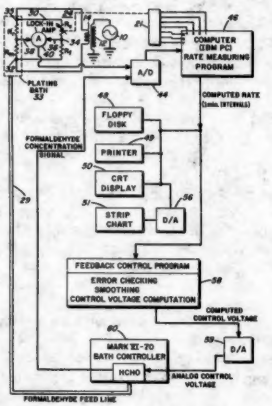
4,623,554
METHOD FOR CONTROLLING PLATING RATE IN AN ELECTROLESS PLATING SYSTEM

Ronald A. Kaschak, Vestal; Roy H. Magnuson, Binghamton, and Edward J. Yarmchuk, Purdys, all of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Mar. 8, 1985, Ser. No. 709,955

Int. Cl.[4] C23C *18/16, 18/40*

U.S. Cl. 427—8 **9 Claims**



1. A method for controlling plating in an electroless plating process for plating with an additive bath, said bath having a replenishment control for establishing a replenishment rate of a selected bath component comprising:

continuously monitoring the plating rate of said additive bath and generating an electrical current representing said monitored rate;

comparing said monitored rate with a desired rate;

deriving a control voltage from the difference between said measured rate and desired rate; and

replenishing said additive bath with said selected bath component as a function of said control voltage.

4,623,555

CONNECTION METHOD

John D. Weyand, Greensburg, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Apr. 25, 1985, Ser. No. 727,379
Int. Cl.[4] B05D *1/08*
U.S. Cl. 427—34 2 Claims

1. A method of making an electrical connection having a region exhibiting a range of compositions, comprising plasma spraying various compositions on top of one another onto a base, wherein the base is a cermet, the various compositions grading to percentagewise progressively more metal.

4,623,556

METHOD OF FORMING A CONTINUOUS GLASS COATING OVER THE SURFACE OF AN ELECTRICAL DEVICE

Richard Brown, Berkeley Heights, and Franco N. Sechi, Princeton Township, Mercer County, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Dec. 31, 1985, Ser. No. 815,393
Int. Cl.[4] H05K *3/28*
U.S. Cl. 427—41 6 Claims

1. A method for forming a continuous glass coating on the surface of an electrical device comprising the steps of:

(a) providing a mixture consisting essentially of (i) an organic vehicle which is reactive with a suitable plasma to form gaseous reaction products at a temperature below the thermal degradation temperature of the organic vehicle and (ii) a fuseable glass frit having a glass transition temperature above the thermal decomposition temperature of the organic vehicle;

(b) forming a continuous layer of the mixture over the surface of the electrical device;

(c) subjecting the layer to a plasma at a temperature below the thermal decomposition temperature of the organic vehicle for a time sufficient to react with all of the organic vehicle in said layer and removing the gaseous products from the layer; and

(d) firing the layer at a temperature of at least the glass transition temperature of the glass frit until the glass frit fuses into a continuous glass coating on the surface of the electrical device.

4,623,557

PROCESS FOR THE PRODUCTION OF HEAT-SENSITIVE RECORDING MATERIALS

Tsunefumi Yamori, Hyogo; Shuki Okauchi, and Hironari Fujioka, both of Osaka, all of Japan, assignors to Kanzaki Paper Mfg. Co., Ltd., Tokyo, Japan

Filed Apr. 15, 1985, Ser. No. 723,342
Claims priority, application Japan, Apr. 17, 1984, 59-78216
Int. Cl.[4] B05D *3/06*
U.S. Cl. 427—44 3 Claims

1. A process for producing a heat-sensitive recording material comprising the steps of (1) applying to a support a coating composition comprising a color former, a color developer, at least one of a water-soluble binder and a water-dispersible binder, and at least one member selected from the group consisting of a water-soluble electron beam-curable monomer, a water-soluble electron beam-curable prepolymer, a water-dispersible electron beam-curable monomer, and a water-dispersible electron beam-curable prepolymer, to form a layer; and (2) irradiating the layer with electron beams.

4,623,558

REACTIVE PLASTISOL DISPERSION

Shiow C. Lin, Ellicott City, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed May 29, 1985, Ser. No. 738,809
Int. Cl.[4] B05D *3/06*
U.S. Cl. 427—44 18 Claims

1. A reactive plastisol dispersion composition consising of

(1) poly(phenylene oxide) (PPO) in powder form, which is insoluble in the reactive plasticizer at room temperature and plasticizable at a temperature at or above the fluxing temperature;

(2) a liquid reactive plasticizer member of the group consisting of (a) at least one epoxide resin having an average of more than one epoxide group in the molecule and (b) a mixture of (a) and at least one liquid monomer, oligomer or prepolymer containing at least one ethylenically unsaturated group; said liquid reactive platicizer being capable of solvating the PPO at the fluxing temperature and being present in an amount ranging from 5 to 2,000 parts per 100 parts by weight of (1); and

(3) 0.01 to 10% by weight of (2) of either a thermal initiator or photoinitiator for plasticizers present in the composition.

14. The process of forming a fiber-reinforced composite which comprises impregnating a fibrous material with a reactive plastisol dispersion composition consisting of

(1) poly(phenylene oxide) (PPO) in powder form, which is insoluble in the reactive platicizer at room temperature and plasticizable at a temperature at or above the fluxing temperature;

(2) a liquid reactive plasticizer member of the group consisting of (a) at least one epoxide resin having an average of more than one epoxide group in the molecule and (b) a mixture of (a) and at least one liquid monomer, oligomer or prepolymer containing at least one ethylenically unsaturated group; said liquid reactive plasticizer being capable of solvating the PPO at the fluxing temperature and being present in an amount ranging from 5 to 2,000 parts per 100 parts by weight of (1); and

(3) 0.01 to 10% by weight of (2) of a thermal initiator for plasticizers present in the composition;

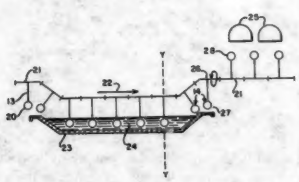
and, thereafter, heating said impregnated fibrous material to a temperature in the range 100°–300° C. for a time sufficient to cause the composition to flux and form a thermoset composite.

4,623,559

U.V. CURED FLEXIBLE POLYESTER-MONOACRYLATE PROTECTIVE THERMISTOR COATINGS HAVING GOOD EDGE COVERAGE AND METHOD OF COATING

John S. Hudock, Hempfield Township, Westmoreland County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 12, 1985, Ser. No. 755,134
Int. Cl.[4] B05D *3/06*
U.S. Cl. 427—54.1 8 Claims



1. A method of curing coated electronic components, where the coating is subject to withdrawal after application, comprising the steps:

(A) placing an electronic component in a bath containing an ultraviolet radiation curable, liquid coating composition

resin comprising a monoacrylate and a photoinitiator, to completely coat the electronic component;

(B) removing the coated electronic component from the resin bath, necessarily causing a downward flow of the applied resin;

(C) rotating the coated electronic component from its bath position to control the flow of resin resulting from removal from the bath; and

(D) passing the rotated electronic component next to a source of ultraviolet radiation.

4,623,560

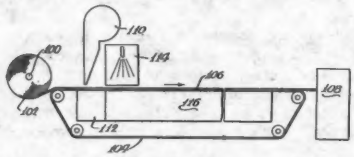
METHOD OF MAKING WATER REMOVING FILTER MEDIA

William R. Ayers, Bement, Ill., assignor to Central Illinois Manufacturing Co., Bement, Ill.

Division of Ser. No. 413,981, Sep. 2, 1982, abandoned. This application Aug. 20, 1984, Ser. No. 642,566

Int. Cl.⁴ B05D *1/12, 3/00*

U.S. Cl. 427—184 **9 Claims**



1. A method of making a filter media to be employed in a filter used to separate water and particulate material from a liquid to be purified comprising the steps of:

providing a fibrous mat of material adapted to mechanically separate particulate material from a liquid to be purified;

applying starch-polyacrylonitrile graft copolymer as a dry granular material to said mat; and

fixing said copolymer to said mat.

4,623,561

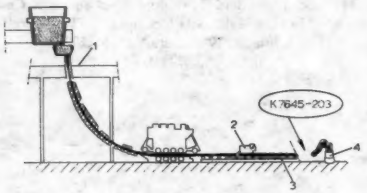
METHOD OF MARKING A HOT STEEL SLAB

Jan C. Groothuizen, Wijk aan Zee, Netherlands, assignor to Hoogovens Groep B.V., Ijmuiden, Netherlands

Filed Jul. 15, 1985, Ser. No. 754,730

Int. Cl.⁴ B05D *3/00, 1/02*

U.S. Cl. 427—275 **6 Claims**



1. Method of marking a hot steel slab, including the step of descaling a chosen surface region at a side of the slab by directing a water jet of high pressure at an acute angle to said surface region in order to remove locally iron oxide therefrom, followed by the step of cooling down below 900° C. the so descaled surface region by directing a gentle water stream at a low pressure in order to prevent secondary oxide growth, and by the step of spraying a water-based marking composition in the required pattern on said descaled and cooled down surface region at the said side of the slab.

4,623,562

PROCESS FOR PRODUCING LIGHT-REFLECTING BODIES

Franz Breitenfellner, Bensheim; Karl Leidig, Heppenheim, and Thomas Kainmüller, Lindenfels, all of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 27, 1985, Ser. No. 802,898

Claims priority, application Canada, Dec. 3, 1984, 5747/84

Int. Cl.⁴ B05D *3/00*

U.S. Cl. 427—296 **16 Claims**

1. Process for producing light-reflecting bodies of which the wall consists of a polyalkylene terephthalate and/or a copolyester thereof, or of a mixture of polyalkylene terephthalates, containing in each case 10–40% by weight of a finely-divided filler, a light-reflecting metal layer being applied directly to at least one surface of the wall, in which process a polyester moulding compound containing:

(a) 90–60% by weight of a polyalkylene terephthalate and/or copolyester thereof, or of a mixture of polyalkylene terephthalates, and

(b) 10–40% by weight of a finely-divided filler is subjected before shaping, at elevated temperature but at a temperature below the melting point of the moulding compound, to a vacuum treatment.

4,623,563

PROCESS FOR PRODUCING POLYIMIDE/METALLIC FOIL COMPOSITE FILM

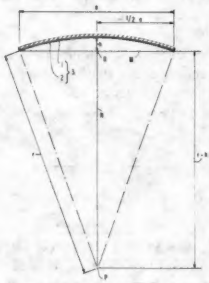
Yuzuru Noda, Osaka, and Masanori Imai, Fukui, both of Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 27, 1985, Ser. No. 716,313

Claims priority, application Japan, Mar. 31, 1984, 59-64224

Int. Cl.⁴ H05K *1/03*

U.S. Cl. 427—379 **14 Claims**



1. A process for producing a polyimide/metallic foil composite film having a curvature radius of at least 25 cm and which is substantially free from curling, which comprises:

coating a solution of a polyimide precursor in an organic polar solvent onto a metallic foil having a thickness of from 1 to 500 μm, said polyimide precursor being prepared by reacting a diamine component comprising p-phenylenediamine with an aromatic tetracarboxylic acid component comprising 3,3',4,4'-biphenyltetracarboxylic dianhydride or a derivative thereof;

drying the resulting coating by heating in the state that the metallic foil is fixed; and

heating the coating at a high temperature to produce a polyimide film having a thickness of from 2 to 200 μm.

4,623,564

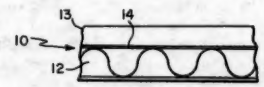
METHOD OF COATING PACKAGING MATERIAL WITH ANTI-STATIC COMPOSITION

Stuart G. Long, South Laguna, and Michael J. Maciocia, Ontario, both of Calif., assignors to General Dynamics, Pomona Division, Pomona, Calif.

Division of Ser. No. 733,221, May 10, 1985, which is a division of Ser. No. 597,974, Apr. 9, 1984. This application Dec. 5, 1985, Ser. No. 804,779

Int. Cl.[4] B05D *3/02*

U.S. Cl. 427—393 **2 Claims**



1. A method of making one or more sheets of a laminated, anti-static, heat sealable backing material comprising the steps of:

composing a mixture whose volume consists essentially of about 31–34% of a thermoplastic ionomer resin, about 30–34% of deionized water, about 30–34% of a volatile solvent, and at least 2% of an organic anti-static compound;

heating said mixture to approximately 200° fahrenheit;

applying a layer of said heated mixture to a sheet of substantially rigid substrate; and

cooling said layer on said sheet.

4,623,565

COATED MICROWAVE COOKWARE

Jozef T. Huybrechts, Oud Turnhout, Belgium, and Lawrence W. McKeen, Stratford, N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 30, 1985, Ser. No. 739,585

Int. Cl.[4] B32B *5/16;* **H05B** *6/64*

U.S. Cl. 428—35 **7 Claims**

1. An article of cookware comprising a substrate of thermoset polyester coated with a multilayer coating, wherein the coating consisting essentially of

a primer layer consisting essentially of epoxy resin, crosslinker resin, curing catalyst, and up to an effective amount of pigmentation, and

a topcoat layer consisting essentially of two silicone resins, curing catalyst, and pigmentation, the first of said silicone resins having a methyl:phenyl molar ratio in the range of 1:1 to 1:1.25, and the second of said silicone resins having such a ratio in the range of 1:1.75 to 1:2.25, and the proportions by weight of said first and second resins being in the range of 67–88% second resin, balance first resin.

4,623,566

FILM OF FIBER-REINFORCED REGENERATED CELLULOSE PROVIDED WITH A GAS-IMPERMEABLE LAYER, FOR THE PRODUCTION OF TUBULAR CASINGS

Erna Kastl, Taunusstein; Ludwig Klenk, Oestrich-Winkel; Horst Faust, Wiesbaden, and Karl Stenger, Rüdesheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 30, 1984, Ser. No. 677,097

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1983, 3343635

Int. Cl.[4] F16L *11/00;* **A22C** *13/00*

U.S. Cl. 428—36 **18 Claims**

1. A gas impermeable film of fiber-reinforced regenerated cellulose suitable for the production of seamed tubular casings, in particular, sausage casings, comprising:

a support material comprising fiber-reinforced cellulose;

a substantially gas-impermeable layer comprising a sealable thermoplastic resin applied to one surface of said support material; and

a gas-permeable layer comprising a sealable thermoplastic resin and including a plurality of linear discontinuities extending essentially parallel to one another and being distributed across the surface thereof applied to the other surface of said support material wherein said discontinuities have a length of about 5 to 1000 μm, an essentially constant width of about 2–15 μm and a depth equivalent to thickness of the gas-permeable layer.

4,623,567

COMPOSITIONS OF ETHYLENE POLYMERS FOR THE MANUFACTURE OF FILMS

Marius Hert, Aubigny en Artois, France, assignor to Societe Chimique des Charbonnages, S.A., France

Filed Jun. 3, 1983, Ser. No. 500,955

Claims priority, application France, Jun. 3, 1982, 82 09634

Int. Cl.[4] C08L *23/06, 23/08, 23/20*

U.S. Cl. 428—36 **12 Claims**

1. A composition comprising (a) from 25 to 95 weight percent of at least one free-radical ethylene polymer having a melt index between 0.15 and 2 dg/min, the free radical ethylene polymer being obtained by polymerization under high pressure and high temperature conditions and (b) from 5 to 75 weight percent of at least one ethylene α-olefin copolymer,

wherein said α-olefin contains at least 4 carbon atoms,

wherein said copolymer has a specific gravity between 0.905 and 0.940 and an average proportion of α-olefin units between 1 and 8 mole percent, said copolymer comprising both crystalline fractions and amorphous fractions and having a melt index between 0.4 and 3 dg/min, wherein said crystalline fractions of said copolymer have a single melting peak between 118° and 130° C. and represent from 20 to 50 weight percent of the total copolymer, the copolymer having a polydispersity index of between about 3 and about 9 for binary polymers and between about 4 and about 12 for ternary polymers;

wherein the distribution of α-olefin units in the copolymer is heterogeneous, and wherein the proportion of α-olefin units in the copolymer varies between at least 0.2 and at most 5 times the average proportion of α-olefin units in the various fractions.

4,623,568

WRAPPING FILMS FOR "NORIMAKI" FOODS

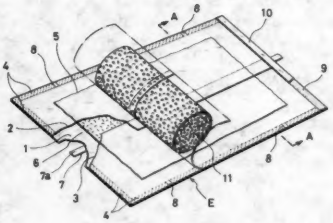
Kisaku Suzuki, 19-8, Toshida 1-Chome, Nerima-ku, Tokyo, Japan

Filed Sep. 18, 1985, Ser. No. 776,857

Claims priority, application Japan, Oct. 17, 1984, 59-157340[U]; May 28, 1985, 60-79803[U]

Int. Cl.[4] B65D *75/02, 75/28*

U.S. Cl. 428—40 **2 Claims**



1. A wrapper for a food combination that includes a flat sheet of laver and a shaped mass of rice, said wrapper comprising

(a) a first sheet of film having dimensions that are greater than the dimensions of the laver,

(b) a second sheet of film which is smaller than said first sheet of film and which has one edge thereof bonded to a first edge of said first sheet of film,

(c) a third sheet of film which is also smaller than said first sheet of film and which has one edge thereof bonded to a second edge of said first sheet of film, said first and second edges of said first sheet of film being opposite each other,

(d) said second and third sheets of film being large enough to completely cover said first sheet of film when they are bonded to the aforesaid opposite edges of said first sheet of film, and to form a space between said first sheet of film and said other two sheets of film which is large enough to accommodate a laver,

(e) said first sheet of film being provided with separating means which can be manually actuated to separate said first sheet of film into two separate portions along a line which is intermediate said first and second edges.

4,623,569

APPLYING REGISTER MARKS TO ARTICLES

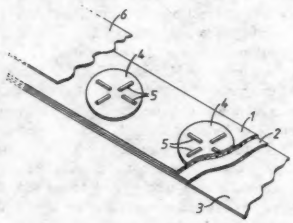
Morris Relson, Great Neck, N.Y., assignor to Esselte Pendaflex Corporation, Graden City, N.Y.

Filed Dec. 10, 1984, Ser. No. 679,747

Claims priority, application United Kingdom, Dec. 8, 1983, 8332782

Int. Cl.[4] B32B *7/06;* **C09J** *7/02*

U.S. Cl. 428—42 **5 Claims**



1. A register marking unit consisting essentially of a thin base carrier sheet having successively printed thereon first, an area of shearable opaque ink removable from the carrier base sheet under the pulling power of an adhesive and second, a design lying wholly or substantially within the ink area and printed in an adhesive.

4,623,570

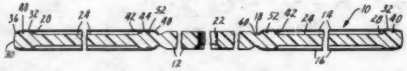
STABLE STRETCHED SURFACE RECORDING MEDIUM

Jerry L. Alexander, St. Paul; Sankar B. Narayan, Birchwood Village; Sten R. Gerfast, Mendota Heights, and Charles E. Nelson, Roseville, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 14, 1985, Ser. No. 711,825

Int. Cl.[4] G11B *5/82*

U.S. Cl. 428—65 **6 Claims**



1. A stretched surface recording disk comprising:

(A) an annular support having

(1) at least one base portion between its inside and outside diameters;

(2) an outer raised annular ridge attached to and projecting from the base portion;

(3) at least one circular outer attachment surface having a diameter greater than that of the innermost part of the outer raised annular ridge;

(4) an inner raised annular ridge attached to and projecting from the base portion and having a diameter less than that of the outer raised annular ridge; and

(5) a circular inner attachment surface having a diameter smaller than that of the outermost part of the inner raised annular ridge; and

(B) an annular recording medium film concentric with the annular support held in radial tension across and out of contact with the base portion, being supported by the inner and outer raised annular ridges and adhered to the inner and outer attachment surfaces of the support by an adhesive; in which track anisotropy measured in the annular recording medium film equilibrated at any condition of temperature and humidity within the range of 10° to 60° C. and 8 to 80% relative humidity is no more than plus or minus 0.4 micrometers.

4,623,571

CUSHIONING MEMBER

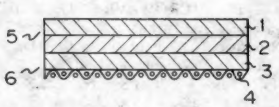
Ryuzo Yamamoto, Suita; Kihei Mori, Ibaraki; Yorihiko Omoto, Kashiwara; Hidehito Iai, Nara, and Toru Kikuchi, Yokohama, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Mar. 29, 1985, Ser. No. 717,513

Claims priority, application Japan, Feb. 4, 1985, 60-18610

Int. Cl.[4] B32B *1/04*

U.S. Cl. 428—68 **8 Claims**



1. A cushioning member comprising a cushioning layer, a heat insulating layer and a dress covering, said heat insulating layer being a laminate comprising (A) a flame-proofing layer and (B) a reinforcing layer, wherein the main fibers of the flame-proofing layer (A) have a melting point of at least 300° C., a specific gravity not higher than 1.6 g/cm^3, and a limiting oxygen index (LOI) of at least 33 and the main fibers of the reinforcing layer (B) have a limiting oxygen index (LOI) smaller than 33 but not smaller than 25, a specific gravity not higher than 1.6 g/cm^3, a tensile strength of at least 3.2 g/d, and a toxicity test value of at least 10, said toxicity test value being the time (minutes) required for a mouse to die when the smoke generated by burning the fiber at 700° C. at an air feed rate of 11.4 l/min at an oxygen concentration of 21% by volume in the fed air is introduced into a box having a volume of 125 l in which the mouse is confined.

4,623,572

METHOD AND APPARATUS FOR PRODUCING TEXTURED NAPPED SURFACES

Hans U. Irrlitz, Schwarzenbach; Werner Kick, Weiden, and Hans Sommer, Schirmitz, all of Fed. Rep. of Germany, assignors to Flachglas AG, Fürth, Fed. Rep. of Germany

Filed Nov. 13, 1984, Ser. No. 671,046

Int. Cl.[4] B05D *1/16*

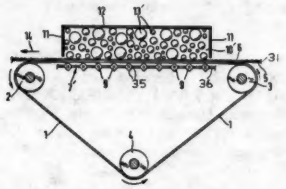
U.S. Cl. 428—90 **6 Claims**

1. A method for producing a napped surface that is lightly and irregularly textured, comprising:

coating the surface of a substrate with adhesive;

covering the coated surface with short textile fibers;

allowing the adhesive to harden to produce a pile layer on the substrate; and



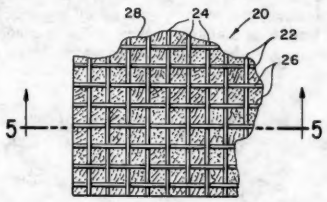
mechanically deforming the pile layer by permitting a plurality of balls made of resilient material to impact thereon.

4,623,573

COMPOSITE NON-DISTORTABLE NEEDLEPOINT CANVAS AND METHOD OF PRODUCING SAME

Marcella M. Katz, 10573 Le Conte Ave., Los Angeles, Calif. 90024

Filed May 28, 1985, Ser. No. 737,702
Int. Cl.[4] A41H *1/00, 3/00, 3/06*
U.S. Cl. 428—109 **21 Claims**



1. A composite laminated, non-distortable needlepoint canvas material comprised of:

(a) a primary layer of non-elastic, open-mesh fabric material having a uniform gridwork pattern with mesh apertures between the threads of said fabric material for receiving needlepoint yarn, said apertures being equal to or larger in size than the threads forming the fabric material, and said threads being impregnated and coated with a synthetic resin mesh-stiffening material having adhesive properties; and

(b) a relatively thin secondary mesh-stabilizing layer of sheer non-elastic fabric material coextensive with said primary layer and permanently bonded to the threads of said primary layer by the synthetic resin mesh-stiffening material coating said threads, the apertures of said primary layer being functionally free of said synthetic resin material and the gridwork of said primary layer remaining distinct through said secondary layer.

8. A composite laminated, non-distortable needlepoint canvas material comprised of:

(a) a primary layer of non-elastic, open-mesh woven fabric material having a uniform gridwork pattern with mesh apertures between the threads of said fabric material for receiving needlepoint yarn, said apertures being equal to or larger in size than the threads forming the fabric material, and said threads being impregnated and coated with a synthetic resin mesh-stiffening material having adhesive properties; and

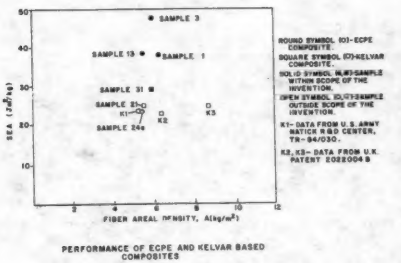
(b) a relatively thin secondary mesh-stabilizing layer of sheer non-elastic fabric material coextensive with said primary layer and permanently bonded to the threads of said primary layer in part by the synthetic resin mesh-stiffening material coating said threads and in part by an interposed layer of synthetic resin adhesive, the apertures of said primary layer being functionally free of said synthetic resin material and of said interposed synthetic resin adhesive and the gridwork of said primary layer remaining distinct through said secondary layer.

4,623,574

BALLISTIC-RESISTANT COMPOSITE ARTICLE

Gary A. Harpell, Morristown; Sheldon Kavesh, Whippany; Igor Palley, Madison, and Dusan C. Prevorsek, Morristown, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jan. 14, 1985, Ser. No. 691,048
Int. Cl.[4] B32B *5/12*
U.S. Cl. 428—113 **31 Claims**



PERFORMANCE OF ECPE AND KELVAR BASED COMPOSITES

1. A ballistic-resistant composite article of manufacture, comprising:

(a) a network of fibers having a tensile modulus of at least about 500 g/denier and an energy-to-break of at least about 22 J/g; and

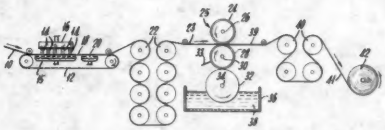
(b) a matrix consisting essentially of an elastomer, which substantially coats each of the individual fibers of said network and has a tensile modulus (measured at 25° C.) of less than about 6,000 psi (41,300 kPa), said composite being capable of absorbing the energy of a projectile.

4,623,575

LIGHTLY ENTANGLED AND DRY PRINTED NONWOVEN FABRICS AND METHODS FOR PRODUCING THE SAME

Berry A. Brooks, Longmeadow, Mass.; John W. Kennette, Somerville, and Conrad C. Buyofsky, South River, both of N.J., assignors to Chicopee, New Brunswick, N.J.

Continuation-in-part of Ser. No. 293,740, Aug. 17, 1981, abandoned, and a continuation of Ser. No. 677,884, Dec. 3, 1984, abandoned, which is a continuation of Ser. No. 540,113, Oct. 11, 1983, abandoned, which is a continuation of Ser. No. 282,481, Jul. 13, 1981, abandoned, which is a continuation of Ser. No. 115,117, Jan. 25, 1980, abandoned, which is a continuation-in-part of Ser. No. 12,417, Feb. 15, 1979, abandoned. This application Feb. 7, 1985, Ser. No. 698,929
Int. Cl.[4] B32B *5/12*
U.S. Cl. 428—113 **21 Claims**



1. A method of producing a strong, durable nonwoven fabric comprising: (a) forming a layer of overlapping intersecting polyester or polyolefin or both fibers; (b) supporting said layer on an apertured support member; (c) jetting pressurized fluid through rows of orifices to form essentially columnar jets

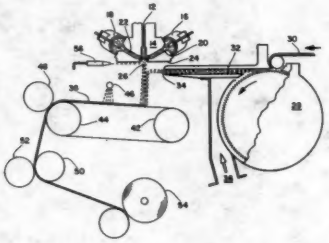
of fluid and directing said jets of fluid against the surface of the fibrous support layer opposite said support member without impeding or diffusing said jets, to rearrange the fibers into a regular repeating pattern of lightly entangled fiber regions, and; (d) applying an effective amount of an adhesive bonding material to said rearranged layer.

4,623,576

LIGHTWEIGHT NONWOVEN TISSUE AND METHOD OF MANUFACTURE

William D. Lloyd; Maung H. Win, both of Neenah, and Dennis E. Malueg, Fremont, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Oct. 22, 1985, Ser. No. 789,982
Int. Cl.[4] B32B 5/14
U.S. Cl. 428—171 **18 Claims**



1. An embossed nonwoven tissue having a total basis weight of from about 20 to about 50 g/m^2 comprising from about 30 to about 80 weight percent meltblown thermoplastic microfibers and from about 20 to about 70 weight percent cellulosic fibers, said tissue having an embossed bonding pattern concentration of from about 100 to about 1500 embossed areas per square inch wherein the thickness of the embossed areas is from about one-third to about two-thirds of the original thickness of the tissue and wherein the thermoplastic microfibers within the embossed areas remain as substantially discrete fibers.

4,623,577

CIRCUIT BOARD MADE FROM CROSS-LINKED POLYCYANURATE POLYMER, THERMOPLASTIC POLYMER AND POLYARAMID FIBER

Eric S. Hsiue, Parsippany; Daniel Zlatyk, Denville; George R. Stone, Hopatcong, and Bruce T. DeBona, Madison, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Feb. 1, 1985, Ser. No. 697,359
Int. Cl.[4] B65D 85/00
U.S. Cl. 428—209 **10 Claims**

1. A circuit board comprising a substrate comprising at least one polymeric layer comprising a crosslinked cyanurate polymer, a thermoplastic polymer having a Tg of greater than 80° C., and at least one balanced polyaramid fibrous layer adhered to the polymeric layer, the substrate having a coefficient of thermal expansion of from 2.0 to 8.0$\times 10^{-6}$ cm/cm/°C.; and at least one layer of conductive material.

4,623,578

EPOXY CROSSLINKED COPOLYMERS OF POLYANHYDRIDES AND LAMINATES THEREFROM

Joseph R. Marchetti, Hempfield Township, Mercer County; Zal N. Sanjana, Penn Hills, and Edward Elikan, Pennsbury Village, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 4, 1985, Ser. No. 720,108
Int. Cl.[4] C08F 222/08; C08G 59/44, 73/10
U.S. Cl. 428—209 **37 Claims**

1. A varnish comprising a solution in an organic solvent of a polyfunctional phenolic imide and an epoxy crosslinking agent in an amount from about stoichiometric to about 25% in excess of stoichiometric with said imide, said imide comprising the reaction product of a polyanhydride having at least three anhydride groups and an aromatic aminophenol having a single aromatic primary amine group.

21. A method of making a varnish comprising preparing a solution in an organic solvent of a polyfunctional phenolic imide and an epoxy crosslinking agent in an amount of about stoichiometric to about 25% in excess of stoichiometric, said imide comprising the reaction product of a polyanhydride having at least three anhydride groups and an aromatic aminophenol having a single aromatic primary amine group.

4,623,579

YARN PRODUCT WITH COMBINED FLUORESCENT-PHOSPHORESCENT APPEARANCE AND METHOD

Joe S. Quon, Sunnyside, N.Y., assignor to Multi-Tex Products Corp., Kearny, N.J.

Continuation of Ser. No. 538,870, Oct. 4, 1983, abandoned. This application Oct. 4, 1985, Ser. No. 784,704
Int. Cl.[4] D02G 3/00
U.S. Cl. 428—215 **9 Claims**

1. A decorative composite laminated yarn product offering a combined phosphorescent and fluorescent decorative appearance, said yarn product comprising one or more filaments prepared from a composite laminate, said composite laminate consisting essentially of:

A. paired outer layers of a thermoplastic resin, each of said outer layers having a thickness of up to about 1 mil; and

B. a decorative layer disposed between said outer layers, said decorative layer having a thickness of up to about 4 mil and prepared from a composition consisting of;

i. a colorant component, and

ii. a resin binder material,

iii. said colorant component present in a amount weight of up to 50% of the total weight of said composition,

iv. said colorant component consisting of a phosphorescent colorant consisting essentially of an inorganic pigment in particulate form having a particle size ranging from about 4 microns to about 10 microns said inorganic pigment based on zinc sulfide, and a fluorescent colorant, said fluorescent colorant having a particule size ranging from about 3 microns to about 50 microns and comprising a fluorescing organic dye disposed in a thermoplastic resin material, and

said phosphorescent colorant and said fluorescent colorant are present in a weight ratio with respect to each other that ranges from 1:1 to 19:1, and

v. said resin binder material selected from the group consisting of polyester resins, polyurethan resins, acrylic polymers and copolymers, polyolefins, elastomers, and mixture thereof.

7. A method for preparing a decorative composite article

offering a combined phosphorescent and fluorescent decorative appearance, consisting essentially of:

A. providing a length of a thermoplastic resinous film having a thickness of up to about 1 mil;

B. coating the thermoplastic resinous film with a composition consisting of

i. a colorant component, and

ii. a resin binder material,

iii. said colorant component present in an amount by weight of up to 50% of the total weight of said composition,

iv. said colorant component consisting of a phosphorescent colorant consisting essentially of an inorganic pigment in particulate form having a particle size ranging from about 4 microns to about 10 microns, said inorganic pigment based on zinc sulfide, and a fluorescent colorant having a particle size ranging from about 3 microns to about 50 microns and comprising a fluorescing organic dye disposed in a thermoplastic resin material, and

said phorphorescent colorant and said fluorescent colorant are present in a weight ration with respect to each other, that ranges 1:1 to 19:1,

v. said resin binder material selected from the group consisting of polyester resins, polyurethane resins, acrylic polymers and copolymers, polyolefins, elastomers, and mixtures thereof,

vi. said composition having a viscosity of 23 seconds as measured with a No. 3 Zahn cup, and

vii. wherein said composition is applied to said thermoplastic film to a thickness of up to about 2 mil and at a controlled velocity to prevent non uniform dispersion of said phosphorescent pigment when said composition impacts said film;

C. drying the film coating in accordance with Step B above;

D. preparing a second indefinite length of a coated film in accordance with the procedures outlined in Steps A–C above;

E. laminating the coated films prepared in Steps A–D above to each other along their coated surfaces, by passing said films together through heated pressure rollers; and

F. longitudinally slitting the composite laminate product prepared in Step E to form a plurality of filaments of said yarn product.

4,623,580

THERMAL TRANSFER RECORDING MEDIUM

Kunihiro Koshizuka, Hino; Takao Abe, Tokyo; Shigehiro Kitamura; Masaki Nakamura, both of Hachioji; Yuji Hotta, Hachioji, and Fumio Ishii, Akishima, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Oct. 29, 1984, Ser. No. 665,789

Claims priority, application Japan, Nov. 2, 1983, 58-204708

Int. Cl.⁴ B41M *5/26*

U.S. Cl. 428—216 **20 Claims**

1. A thermal transfer recording medium comprising a support and a plurality of thermal-transferable layers containing a thermal-fusible material, said layers, as a whole, containing a coloring agent and 0 to 30% by weight of the whole coloring agent being present in the furthest layer thereof from said support.

4,623,581

COMPOSITIONS OF ETHYLENE POLYMERS FOR THE MANUFACTURE OF FILMS

Marius Hert, Aubigny en Artois, France, assignor to Societe Chimique des Charbonnages S.A., France

Filed Jun. 3, 1983, Ser. No. 500,956

Claims priority, application France, Jun. 3, 1982, 82 09633

Int. Cl.⁴ C08L *23/06, 23/08, 23/20*

U.S. Cl. 428—220 **8 Claims**

1. A composition comprising (a) from 2 to less than 25 weight percent of at least one free radical ethylene polymer with a specific gravity between 0.91 and 0.94, and a melt index of at least 0.3 dg/min. and not more than 2 dg/min., the free radical ethylene polymer being obtained by polymerization under high pressure and high temperature conditions, and (b) from 75 to 98 weight percent of at least one copolymer of ethylene and at least one α-olefin containing at least 4 carbon atoms, with a specific gravity between 0.905 and 0.940 and a melt index between 0.4 and 3 dg/minute, the average proportion of α-olefin units in the copolymer being between 1 and 8 mole percent, the copolymer comprising crystalline fractions and amorphous fractions, wherein said crystalline fractions of said copolymer have a single melting peak between 118° C. and 130° C. and represent from 20 to 50 weight percent of the total copolymer, the copolymer having a polydispersity index of between about 3 and about 9 for binary polymers and between about 4 and about 12 for ternary polymers;

wherein the distribution of the α-olefin units in the copolymer is heterogeneous and wherein the proportion of α-olefin units in the copolymer varies between at least 0.2 and at most 5 times the average proportion, depending on the fractions considered.

4,623,582

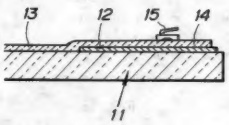
SHEET OF GLASS

Jun Hasegawa, and Makoto Ueda, both of Tokyo, Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Filed Apr. 16, 1986, Ser. No. 852,787

Int. Cl.⁴ B32B *7/00, 15/00*

U.S. Cl. 428—220 **3 Claims**



1. A sheet of glass comprising:

a surface;

a baked ceramic paste disposed on said surface; and

a baked silver paste disposed on said surface over said ceramic paste, said baked silver paste containing silver at a proportion of at least 60 wt %.

2. A sheet of glass according to claim 1, wherein said baked silver paste has a thickness in the range of from 4 to 20 microns.

4,623,583

FLAME RETARDANT TEXTILE FABRICS

Vladimir Mischutin, Union City, N.J., assignor to White Chemical Corporation, Newark, N.J.

Division of Ser. No. 31,307, Apr. 18, 1979, Pat. No. 4,348,306, which is a continuation of Ser. No. 797,767, May 17, 1977, Pat. No. 4,158,077, which is a division of Ser. No. 538,896, Jan. 6, 1975, abandoned, which is a division of Ser. No. 300,732, Oct. 25, 1972, abandoned. This application Jul. 26, 1982, Ser. No. 401,735

Int. Cl.⁴ B32B *5/16*

U.S. Cl. 428—242 **14 Claims**

1. A textile material to which has been applied a flame retardant composition that comprises:

a water-insoluble, solid, aromatic, organic brominated compound,

a wetting agent for said organic compound,

a protective colloidal material, and

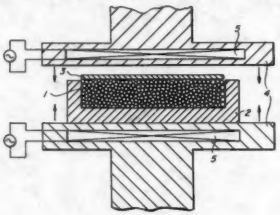
a water medium wherein the brominated organic compound is suspended in finely divided form, with substantially all of the particles thereof under 10 microns in average diameter.

4,623,584

EXPANDABLE PHENOLIC RESIN-COATED COMPOSITE BEADS, A PROCESS FOR PRODUCTION THEREOF AND A PROCESS FOR MOLDING THEREOF

Kodo Masui; Shigetoshi Tanaka, and Yoshikazu Kobayashi, all of Nara, Japan, assignors to Sekisui Kaseihin Kogyo Kabushiki Kaisha, Nara, Japan

Filed Feb. 1, 1985, Ser. No. 696,988
Claims priority, application Japan, Sep. 8, 1984, 59-188659
Int. Cl.[4] B29C *43/18, 67/18, 67/22*
U.S. Cl. 428—304.4 **19 Claims**



16. A process for molding a face plate-laminated phenol resin composite cellular molding which comprises coating an aggregate with a solid expandable resin composition comprising a solid, phenolic resin initial condensation product and a foaming agent to form expandable phenolic resin-coated composite beads, inserting a face plate in a mold, adding the expandable phenolic resin-coated composite beads therein and, foaming and hardening the expandable phenolic resin-coated beads by heating while adhesing them to the face plate.

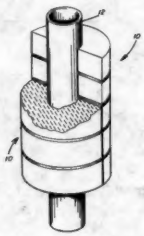
19. A face plate-laminated phenolic resin composite cellular molding molded according to the process of claim **16**.

4,623,585

CELLULAR CERAMIC INSULATING BODY AND METHOD FOR MAKING SAME

Robert W. Linton, Export, and Alex W. Orlowski, Trafford, both of Pa., assignors to Pittsburgh Corning Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 558,808, Dec. 7, 1983. This application Aug. 30, 1985, Ser. No. 771,306
Int. Cl.[4] B32B *1/08, 3/26, 7/12, 31/00*
U.S. Cl. 428—312.8 **10 Claims**



1. A cellular ceramic insulating body for insulating a member comprising,

a plurality of rigid cellular ceramic segments bonded to each other, each of said segments having a preselected height,

each of said rigid cellular ceramic segments formed from a cellular ceramic block having a length, a width, a height, a top surface and a bottom surface, said preselected height of each of said rigid cellular ceramic segments being substantially equal to the height of the cellular ceramic block from which it is formed,

a bonding agent adhesively securing top surfaces of said rigid cellular ceramic segments to said bottom surfaces of adjacent cellular ceramic segments,

said bonding agent providing a flexible bond between said rigid cellular segments and extending substantially perpendicular to the surface of said member being insulated, and

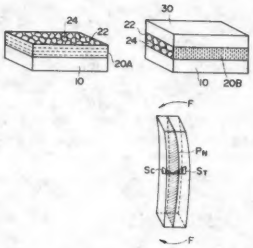
said cellular ceramic insulating body formed of said bonded rigid cellular ceramic segments being operable to resist thermally induced cracking in the cellular ceramic segments at temperatures up to at least 650° F.

4,623,586

VIBRATION DAMPING MATERIAL OF POLYMER BASE CONTAINING FLAKE FILLER

Kaoru Umeya, Sendai; Michiharu Mishima, Matsuzaka, and Yoshihiro Sugata, Sendai, all of Japan, assignors to Central Glass Company, Limited, Ube, Japan

Continuation of Ser. No. 541,411, Oct. 13, 1983, abandoned. This application Nov. 18, 1985, Ser. No. 798,362
Claims priority, application Japan, Oct. 15, 1982, 57-181075
Int. Cl.[4] B32B *27/00, 19/00*
U.S. Cl. 428—324 **15 Claims**



1. A vibration damping composite material for use in a vibration damping system of the constrained type, the composite material being in the form of a sheet and comprising:

an organic polymer matrix; and

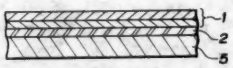
a flake filler substantially uniformly dispersed in said polymer matrix and consisting of flake particles having a mean diameter in the range of from about 20 to about 1000 microns and each having a thickness in the range of from about 1 to about 100 microns and a diameter-to-thickness aspect ratio of at least about 10, said flake particles being substantially entirely oriented so as to each make a standard angle of 90°, with a tolerance of ±30°, with respect to a plane parallel to said sheet.

4,623,587

MULTI-LAYER FILM OR SHEET MATERIAL

Masakazu Ito, and Shinji Kawamura, both of Sodegaura, Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

Filed Oct. 9, 1984, Ser. No. 658,497
Claims priority, application Japan, Oct. 18, 1983, 58-193430; Oct. 18, 1983, 58-193431
Int. Cl.[4] B32B *27/00*
U.S. Cl. 428—335 **21 Claims**



1. A multi-layer film or sheet material which comprises:

(A) a layer formed of a resin composition consisting essentially from 5 to 80 parts by weight of the polypropylene-based resin and from 95 to 20 parts by weight of the linear

low-density ethylene α-olefin copolymer having a density in the range from 0.900 to 0.950 g/cm3; and

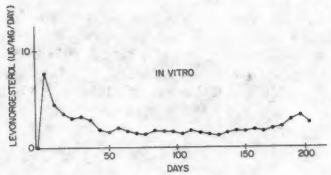
(B) a layer formed of a resin composition consisting essentially from 50 to 99 parts by weight of the polypropylene-based resin and from 50 to 1 part by weight of the low-crystallinity α-oelfin copolymer having a density of from 0.860 to 0.890 g/cm^3.

4,623,588

CONTROLLED RELEASE COMPOSITE CORE COATED MICROPARTICLES

Elie S. Nuwayser, Wellesley, and William A. Nucefora, Bedford, both of Mass., assignors to Biotek, Inc., Woburn, Mass.

Division of Ser. No. 577,079, Feb. 6, 1984, Pat. No. 4,568,559.
This application Dec. 2, 1985, Ser. No. 803,733
Int. Cl.^{4} A61K *9/30, 9/50, 9/58;* **B05D** *7/02*
U.S. Cl. 428—402.24 **9 Claims**



1. A microparticle suitable for the controlled release of an active ingredient, which microparticle comprises:

(a) a solid composite core material comprising a uniform dispersion of a finely-divided active ingredient and a film-forming polymer, the active ingredient present in an amount of from about 5% to 95% by weight of the core material;

(b) a generally uniform outer wall coating about the composite core material in a wall thickness, to provide for the desired controlled release of the active ingredient, said outer wall coating comprising a film-forming polymer the same or substantially the same as the said film-forming polymer in the core material, to provide for bonding of the wall coating of the film-forming polymer to the core material; and

(c) the microparticle less than about 1000 microns in size.

4,623,589

PARTICULATE POLYMERIC MATERIALS AND METHODS FOR USING PARTICULATE POLYMERIC MATERIALS

Robert C. Simmonds, Jr., Boxford, Mass., assignor to USM Corporation, Flemington, N.J.

Filed Feb. 13, 1985, Ser. No. 699,683
Int. Cl.^{4} B32B *27/32*
U.S. Cl. 428—403 **21 Claims**

1. A heat fusible, flowable, particulate material for providing fused polymeric articles which comprises:

(a) a fusible polymeric component in the form of a powder comprising a nonionomeric polyolefin, an ionomeric polyolefin or mixtures of these;

(b) a silicone release agent in an amount from about 0.01 to about 0.5 percent by weight based upon the total weight of particulate material;

(c) an antistatic agent in an amount from about 0.01 to about 0.5 percent by weight based on the total weight of particulate material;

(d) an antiagglomerating agent which will soften at or below the temperature for fusing the polymer powder comprising a metallic stearate in an amount effective to hold individual polymer particles apart and prevent intimate contact between the surfaces of said particles;

whereby the material can be heated to a temperature for fusing the material to provide a fused polymeric mass having a release coating on the surface of the mass which permits removal of the mass from a surface carrying the mass.

13. A process for producing fused polymeric articles comprising the steps of:

(a) providing a three dimensional pattern of a fusible particulate polymeric material on a surface, said particulate polymeric material comprising

(i) a fusible polymeric component in the form of a powder comprising a nonionomeric polyolefin, an ionomeric polyolefin or mixture of these;

(ii) a silicone release agent in an amount from about 0.01 to 0.5 percent by weight based upon the total weight of particulate polymeric material;

(iii) an antistatic agent in an amount from about 0.01 to about 0.5 percent by weight based on the total weight of particulate polymeric material; and

(iv) an antiagglomerating agent which will soften at or below the temperature for fusing the polymer powder comprising a metallic stearate in an amount effective to hold individual particles apart and prevent intimate contact between the surfaces of said particles;

(b) heating said three dimensional pattern to provide a fused mass of said particulate polymeric material;

(c) cooling said fused mass; and

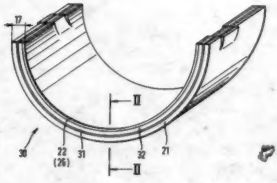
(d) removing said mass from said surface as a dimensionally stable, three dimensional polymeric article.

4,623,590

COMPOSITE MATERIAL, ESPECIALLY FOR PLAIN BEARINGS

Erich Hodes, Rosbach, and Karl-Heinz Wegner, Bad-Schwalbach, both of Fed. Rep. of Germany, assignors to Glyco-Metall-Werke, Daelen & Loos GmbH, Wiesbaden, Fed. Rep. of Germany

Filed Nov. 20, 1984, Ser. No. 673,543
Claims priority, application Fed. Rep. of Germany, Nov. 30, 1983, 3343309
Int. Cl.^{4} C08F *45/04*
U.S. Cl. 428—408 **15 Claims**



1. A composite antifriction bearing for use in internal combustion engines comprising:

a metal support; and

an antifriction sliding-contact layer on and bonded to said support and comprising:

a synthetic resin thermoplastic matrix of polyether sulfone,

short reinforcing thermally refractory fibers distributing uniformly in said matrix and having a modulus of elasticity of at least 50 MPa, and

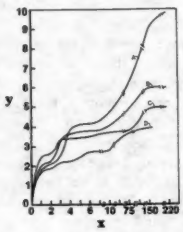
solid lubricants and other fibers, said short fibers having good sliding characteristics and melting point, softening point and decomposition point temperatures above 300° C. and being selected from the group which consists of synthetic resin fibers, glass fibers, natural fibers, metal and metal alloy fibers, and carbon fibers.

4,623,591

AMORPHOUS HYDRATED METAL OXIDE PRIMER FOR ORGANIC ADHESIVELY BONDED JOINTS

Roscoe A. Pike, Granby, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Sep. 9, 1985, Ser. No. 774,256
Int. Cl.[4] B32B *27/38*
U.S. Cl. 428—414 10 Claims



1. A plurality of articles bonded to one another through a layer of polymeric adhesive of at least one of said articles being a metal article wherein the improvement comprises at least one of the metal

articles having a layer of amorphous hydrated metal oxide thereon and in contact with the adhesive layer, the layer of amorphous hydrated metal oxide formed by application onto the metal article and subsequent hydrolysis of a layer of $M_x(OR)_y$, where

(a) x is 1;

(b) y is 3 or 4;

(c) M is any metal capable of forming a stable alkoxide; and

(d) R is an organic radical; resulting in a bond resistant to crack propagation.

6. A method of bonding a plurality of articles together at least one of which is metal by placing a polymeric adhesive in contact with and between the articles and applying pressure, and optionally heat, to said articles wherein the improvement comprises:

(a) applying to a surface of at least one of the metal articles prior to placing adhesive on the surface a layer of $M_x(OR)_y$ wherein

(i) x is 1;

(ii) y is 3 or 4;

(iii) M is any metal capable of forming a stable alkoxide; and

(iv) R is an organic radical;

(b) exposing the metal article having the $M_x(OR)_y$ layer thereon to moisture and a temperaure of about 25° C. to about 125° C. prior to contact with the adhesive;

resulting in a joint resistant to crack propagation.

4,623,592

ADHESIVE IN PREPARATION OF LAMINATES

Gérard Daudé, Villeneuve d'Ornon, and Philippe Girard, Evreux, both of France, assignors to Saint-Gobain Vitrage, Neuilly-sur-Seine, France

Filed Dec. 5, 1980, Ser. No. 213,225
Claims priority, application France, Dec. 6, 1979, 79 29968
Int. Cl.[4] B32B *17/10, 27/40*
U.S. Cl. 428—423.3 17 Claims

1. A glazing laminate comprising a self-healing plastic material adhered to a glass or plastic ply by a transparent, humidity-resistant adhesive comprising a thermoplastic polyurethane which is formed by the in situ decomposition of a blocked polyurethane having an excess of blocked isocyanate groups over active hydrogen-containing groups.

4,623,593

SELF-ADHESIVE POLYMER COMPOSITION FOR USE AS PROSTHETIC APPLIANCE

Robert E. Baier, Amherst, N.Y., and Keith Kent, c/o Calspan Corporation, 4455 Genesee St., Buffalo, N.Y. 14225, assignors to Keith Kent, Tampa, Fla.

Filed Jul. 12, 1983, Ser. No. 512,872
Int. Cl.[4] B32B *9/04;* C08G *77/06;* B29B *7/36*
U.S. Cl. 428—447 3 Claims

1. An elastomeric polymeric article comprising:

a cured, non-tacky base polymer having an integral surface layer,

said surface layer of said base polymer being modified to have an inhibited, limited degree of crosslinking so that said surface layer has pressure sensitive adhesive properties, said polymer being a silicone rubber.

4,623,594

ANTISTATIC RESIN COMPOSITION

Allen H. Keough, Sudbury, Mass., assignor to Metallized Products, Inc., Winchester, Mass.

Continuation of Ser. No. 588,337, Mar. 12, 1984, abandoned, which is a continuation-in-part of Ser. No. 473,593, Mar. 9, 1983, abandoned. This application Jun. 28, 1985, Ser. No. 750,648
Int. Cl.[4] B32B *27/00*
U.S. Cl. 428—500 24 Claims

1. An antistatic laminate, both sides of which have antistatic characteristics, comprising:

(A) a substrate sheet;

(B) a continuous coating on one side of said substrate sheet, said continuous coating comprising the electron radiation cured product of:

(1) an electron beam curable prepolymer; and

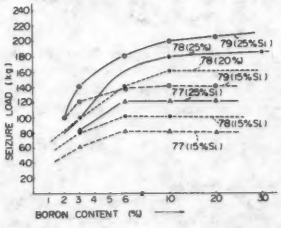
(2) an effective amount of a saturated quaternary ammonium compound antistatic agent soluble in said prepolymer the product being a reaction product of the prepolymer and the ammonium compound converted into a substantially solid product.

4,623,595

SLIDING MEMBER AND PROCESS FOR PRODUCING THE SAME

Kenichiro Futamura, Toyota; Eiji Asada, Okazaki, and Tatsuhiko Fukuoka, Aichi, all of Japan, assignors to Taiho Kogyo Co., Ltd., Aichi, Japan

Continuation-in-part of Ser. No. 238,105, Feb. 25, 1981, Pat. No. 4,435,482. This application Feb. 3, 1983, Ser. No. 463,562
The portion of the term of this patent subsequent to Mar. 6, 2001, has been disclaimed.
Int. Cl.[4] B22F *7/04*
U.S. Cl. 428—553 6 Claims



1. A composite sliding member comprising:

a base comprising an iron-based alloy; and

a bearing layer having a nonporous structure, consolidated with said base by fusion and formed by applying on said base a powder coating having a thickness of not more than 0.5 mm and then baking said powder coating, comprising

at least one iron family element comprised of at least one third iron by weight and an additive component including boron in an amount of from 3% to 30% by weight based on said powder coating, at least temporarily, during said baking to a temperature exceeding the solidus of said powder, thereby essentially converting the applied powder to a liquid phase, and fusion-bonding said applied mixture to said base.

4,623,596

CELL STACK FOR FUEL CELLS

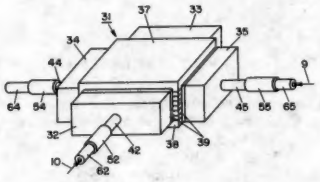
Tomoyoshi Kamoshita, Yokosuki, Japan, assignor to Fuji Electric Corporate Research & Development Ltd., Yokosuka, Japan

Filed Jul. 23, 1985, Ser. No. 757,893

Claims priority, application Japan, Jul. 28, 1984, 59-115573[U]

Int. Cl.⁴ H01M *8/04*

U.S. Cl. 429—26 **4 Claims**



1. A fuel cell comprising a plurality of fuel cell blocks stacked together in a series arrangement, each cell block comprising a plurality of unit cells stacked together in a series arrangement, and gas supply means including at least one pair of manifolds for each cell block for supplying and for returning of one of the component reaction gases to the block, all of the supply manifolds of the one gas being connected to a common supply pipe and all of the return manifolds of the one gas being connected to a common return pipe and an electrical insulation barrier being interposed between each manifold and the common pipe to which it is connected, whereby each of the manifolds is electrically insulated from its cell block and from one another.

4,623,597

RECHARGEABLE BATTERY AND ELECTRODE USED THEREIN

Krishna Sapru, Troy; Benjamin Reichman; Arie Reger, both of Birmingham, and Stanford R. Ovshinsky, Bloomfield Hills, all of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Continuation of Ser. No. 614,273, May 25, 1984, abandoned, which is a continuation of Ser. No. 372,693, Apr. 28, 1982, abandoned. This application Nov. 25, 1985, Ser. No. 801,545

The portion of the term of this patent subsequent to Dec. 11, 2000, has been disclaimed.

Int. Cl.⁴ H01M *4/02, 10/36*

U.S. Cl. 429—101 **32 Claims**

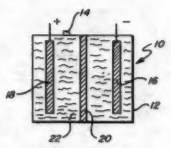
1. A hydrogen battery comprising:

at least one anode for reversibly electrochemically charging and discharging hydrogen, said anode comprising a disordered multicomponent material, said disordered multicomponent material having at least one structure selected from the group consisting of: amorphous, microcrystalline, polycrystalline lacking long-range compositional order with three or more phases of said polycrystalline structure and any combination of said amorphous, microcrystalline and polycrystalline structures;

a casing having said anode positioned therein;

at least one cathode capable of reversible oxidation positioned within said casing and spaced from said anode;

a separator separating the cathode and said anode; and



an electrolyte in contact with both said cathode and said anode.

4,623,598

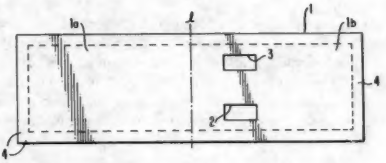
FLAT BATTERY

Eiichi Waki, Katano; Shigeo Kobayashi, Yawata; Yutaka Hashimoto, and Miyoji Nakai, both of Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Feb. 22, 1985, Ser. No. 711,539

Int. Cl.⁴ H01M *6/12*

U.S. Cl. 429—162 **10 Claims**



1. A flat battery comprising:

an electrically insulative sheathing film including a first film portion and a second film portion on opposite sides of a fold line, said film having an outer surface and an inner surface opposite said outer surface, on both of said first and said second film portions, said fold line dividing said inner surface into a first inner surface portion on said first film portion and a second inner surface portion on said second film portion, said film being folded along said fold line so that said first inner surface portion faces said second inner surface portion, said first and second film portions being sealed to one another along the entire peripheries thereof except along said fold line, said first film portion having first a first terminal hole and a second terminal hole formed therein;

a first collector formed in a plane on said first inner surface portion and having a first terminal portion covering said first terminal hole, said first terminal portion being exposed to the exterior of said battery through said first terminal hole so as to define a first terminal;

a second collector consisting of a first part formed on said first inner surface portion and a second part continuous to said first part formed on said second inner surface portion, said second collector extending across and being folded along said fold line, said second part having a second terminal portion covering said second terminal hole, said second terminal portion being exposed to the exterior of said battery through said second terminal hole so as to define a second terminal, said second part being formed in said plane in spaced non-overlapping relation to said first collector, one of said first and second collectors consisting of a positive collector, the other of said first and second collectors consisting of a negative collector, and

a flat generating element between said first and second film

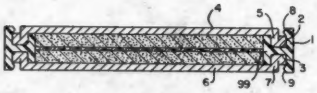
portions, including a positive active material in contact with said positive collector, a negative active material in contact with said negative collector and a separator separating said positive and negative active materials.

4,623,599

DOUBLE-GROOVED GASKET FOR GALVANIC CELLS

Harry Vourlis, Lakewood, Ohio, assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 27, 1985, Ser. No. 749,544
Int. Cl.[4] H01M 2/08
U.S. Cl. 429—174 20 Claims



1. A galvanic cell having an anode, an electrolyte and a cathode assembled in a sealed cell housing, said housing comprising,

(a) a first cover member having at least one dependent skirt;

(b) a second cover member having at least one dependent skirt;

(c) an electrically non-conductive gasket having a central opening, an upper surface with a groove disposed in said upper surface, a lower surface with a groove disposed in said lower surface, and an inner wall inward of the upper and lower surface grooves defining said central opening;

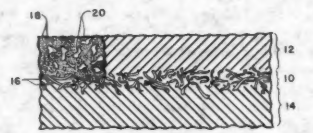
said dependent skirt of said first cover member being positioned in said groove in said lower surface of said gasket, said dependent skirt of said second cover member being positioned in said groove in said upper surface of said gasket and, said inner wall of said gasket contacting the interior portions of both of said cover members and having a height equal to the distance between said cover members in the interior of said cell housing.

4,623,600

LOW SHEAR NICKEL ELECTRODE

David H. Fritts, Dayton, and John F. Leonard, Xenia, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Division of Ser. No. 559,170, Dec. 8, 1983, abandoned. This application Aug. 23, 1985, Ser. No. 768,657
Int. Cl.[4] H01M 4/32, 4/80
U.S. Cl. 429—223 8 Claims



1. A battery plaque consisting essentially of a centrally located layer of a conductive felt having a layer of sintered metal powder on each side thereof, wherein said sintered metal layers do not connect through said felt layer and wherein there is substantially no attachment of the metal powder particles in said sintered layers to the strands in said felt layer, thereby allowing a degree of slippage between said felt layer and said sintered layers.

4,623,601

PHOTOCONDUCTIVE DEVICE CONTAINING ZINC OXIDE TRANSPARENT CONDUCTIVE LAYER

Steven C. Lewis, Alhambra; Robert B. Love, Chatsworth; Stephen C. Miller, Simi Valley; Yuh-han Shing, Thousand Oaks; John W. Sibert, Venice; David P. Tanner, Thousand Oaks, all of Calif., and Nang T. Tran, Cottage Grove, Minn., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jun. 4, 1985, Ser. No. 740,945
Int. Cl.[4] G03G 5/082
U.S. Cl. 430—69 17 Claims

1. In a photoconductive device comprising a thin film silicon hydrogen alloy (TFS) photoconductor and front and back contacts, the improvement which comprises at least one of said front and back contacts being a transparent conductive layer consisting essentially of zinc oxide or zinc oxide containing hydrogen or zinc oxide containing a group III element or zinc oxide containing both hydrogen and a group III element, said transparent conductive layer havng a resistivity in the range of about 10^{-4} to 10^{-2} ohm-centimeter.

4,623,602

MAGNETICALLY ATTRACTABLE COLOR TONER POWDER

Martin Bakker, Grubbenvorst, and Johannes A. H. Van Laarhoven, Cuyk, both of Netherlands, assignors to Oce-Nederland B.V., Venlo, Netherlands

Filed Feb. 19, 1985, Ser. No. 702,666
Claims priority, application Netherlands, Feb. 29, 1984, 8400638
Int. Cl.[4] G03G 9/08, 9/14
U.S. Cl. 430—106 8 Claims

1. In colored magnetically attractable toner powder, the individual particles of which comprise a core containing magnetically attractable material, a light-reflecting layer enveloping said core containing a binder and light-reflecting pigment, and a coloring layer covering said light-reflecting layer and containing a binder and non-yellow fluorescent dye, the improvement comprising in combination therewith a yellow-fluorescent dye added to said light-reflecting layer in an amount up to 10% by weight of the binder to obtain maximum light-reflection in the wavelength between 500 to 560 nm and to the coloring layer wherein said binder in both of said layers consists of a polymer in which said yellow-fluorescent dye fluoresces.

4,623,603

SPHERICAL ELECTROPHOTOGRAPHIC MAGNETOPLUMBITE-TYPE HEXAGONAL FERRITE CARRIER POWDER

Tsutomu Iimura, Tachikawa, and Minoru Chinju, Kumagaya, both of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Continuation of Ser. No. 482,547, Apr. 6, 1983, abandoned. This application Jun. 17, 1985, Ser. No. 744,906
Claims priority, application Japan, Apr. 7, 1982, 57-57752
Int. Cl.[4] G03G 9/14
U.S. Cl. 430—108 16 Claims

1. An article of manufacture for use as an electrophotographic ferrite carrier, the article comprising a hexagonal ferrite material in particulate form, the material being represented by the general formula $MeFe_{12}O_{19}$, wherein Me is selected from the group consisting of Ba, Sr, Pb and Ca and a portion of Me is substituted with at least one metal, said particles having an electrical resistivity of at least 10^3 Ω-cm, a saturation magnetization of at least 10 emu/g and a average particle size of about 20–1,000 μm.

4,623,604

TRIBOELECTRIC STABILIZED TONER FOR DEVELOPING ELECTRICALLY CHARGED IMAGES AND A METHOD FOR THE PRODUCTION THEREOF

Hiroyuki Takagiwa; Kenzi Thuzita; Goichi Yamakawa; Makoto Tomono, all of Hachioji; Saburo Wakimoto, Kanagawa; Sadayasu Miyahara, Fujisawa; Tetsumasa Ishida, Yokohama; Yoshihiko Hyosu, Sagamihara, and Tsuneo Wada, Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 473,977, Mar. 11, 1983, abandoned, which is a continuation of Ser. No. 259,578, May 1, 1981, abandoned. This application Jan. 25, 1985, Ser. No. 695,408

Claims priority, application Japan, May 2, 1980, 55-57927; May 2, 1980, 55-57928

Int. Cl.[4] G03G *9/08*

U.S. Cl. 430—109 18 Claims

1. A toner for developing electrostatically charged images comprising colorant-containing nuclear particles formed by polymerization, hydrophobic silica, and a resin, wherein said resin is coated on the surface of said nuclear particles and said silica is dispersed in said resin surface coating.

4,623,605

DRY DEVELOPER FOR DEVELOPING ELECTROSTATIC LATENT IMAGES CONTAINS SILICA AND TITANIUM DIOXIDE

Hitoshi Kato, Itami; Toshitaro Kohri, Higashiosaka, and Junji Machida, Itami, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 18, 1984, Ser. No. 683,199

Claims priority, application Japan, Dec. 26, 1983, 58-251786

Int. Cl.[4] G03G *9/10*

U.S. Cl. 430—110 2 Claims

1. A dry developer for developing electrostatic latent images comprising (A) a positive charge type carrier comprising fine particles of a mixture of a styrene-acrylic copolymer, carbon black and a magnetic powder, and (B) a negative charge type toner comprising a thermoplastic polymer selected from the group consisting of a polyester and a styrene-acrylic acid ester, and a charge controlling agent, wherein the negative charge type toner includes, as after-treating agents, fine particles of hydrophobic silica, having an average particle diameter of 100 mμ or less, in an amount of 0.05–1.0 percent by weight relative to the toner, and fine particles of hydrophobic TiO_2, having an average particle diameter of 100 mμ or less, in an amount of 0.1–3.0 percent by weight relative to the toner, the weight ratio of the fine particles of hydrophobic silica to the fine particles of hydrophobic TiO_2 being 1:5 to 1:1.

4,623,606

TONER COMPOSITIONS WITH NEGATIVE CHARGE ENHANCING ADDITIVES

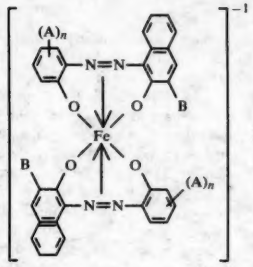
Roger N. Ciccarelli, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 24, 1986, Ser. No. 822,186

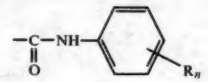
Int. Cl.[4] G03G *9/10*

U.S. Cl. 430—110 30 Claims

1. A negatively charged toner composition comprised of resin particles, pigment particles, and as a charge enhancing additive an iron complex compound of the following formula:



wherein A is independently selected from the group consisting of hydrogen, alkyl substituents, halogen, nitro, and alkoxy; n is the number 1, 2 or 3; X is a cation; and B is of the formula



wherein R is selected from the group consisting of hydrogen, alkyl, halogen, nitro, and alkoxy; and n is as defined herein.

4,623,607

PROCESS OF FORMING A PHOTORESIST PATTERN AND APPARATUS FOR CORRECTING THE PATTERN

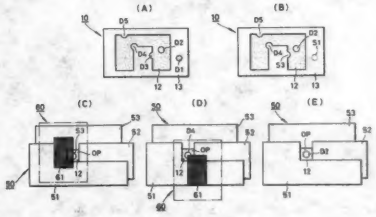
Kozo Hosogai, Ebina, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 480,852, Mar. 31, 1983, abandoned. This application Aug. 21, 1984, Ser. No. 643,088

Claims priority, application Japan, Apr. 6, 1982, 57-56975

Int. Cl.[4] G03C *5/00*

U.S. Cl. 430—312 3 Claims



1. A process of forming a photoresist pattern on a film material to be photo-etched, comprising steps of:

covering said film material with a light sensitive photoresist layer;

exposing said photoresist layer to light through first light shielding means on which a desired photoetching pattern is formed;

developing the light-exposed photoresist layer using a suitable developer to form a photoresist pattern corresponding to said desired photoetching pattern; and

detecting a defective part in the photoresist pattern and correcting the defective part by conducting a partial treatment on said photoresist pattern, characterized in that said partial treatment has the steps of:

dropping a photoresist material onto said defective part of the photoresist pattern so as to selectively coat said defective part with said photoresist material, said defective part

of the photoresist pattern including a defect adjacent the apex of an L-shaped region,

exposing the selectively coated part to light through second light shielding means comprising a plurality of positive type masks for shielding all but a predetermined rectilinear portion from light irradiation and a single negative type mask positioned to permit light to pass through all but a rectilinear subregion of said predetermined portion, said single negative type mask consisting of a planar member which is transparent but includes a rectilinear opaque region, said negative type mask being positioned with respect to the positive type masks so that said opaque regions covers said rectilinear subregion of said predetermined portion, whereby light is permitted to pass only through the resulting generally L-shaped opening, said masks being situated so that light passing through said L-shaped opening will selectively expose said dropped photoresist in an L-shaped area coinciding with said L-shaped defect containing region, and

developing said part so as to obtain a desired photoresist pattern.

4,623,608

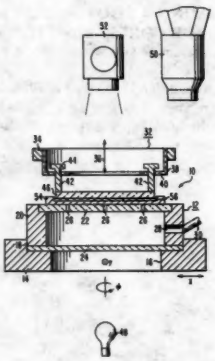
METHOD AND APPARATUS FOR COATING A SELECTED AREA OF THE SURFACE OF AN OBJECT

Zygmunt M. Andrevski, Princeton Township, Mercer County, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Mar. 14, 1985, Ser. No. 711,719

Int. Cl.[4] G03B *27/42*

U.S. Cl. 430—322 **9 Claims**



1. A method of coating a selected area of a surface of a thin substrate with a metal film including the steps of

(a) supporting the substrate with the surface to be coated exposed,

(b) coating said substrate surface with a layer of a photoresist,

(c) placing a mask over said substrate surface and slightly spaced from the photoresist layer,

(d) moving the substrate with respect to the mask to align a pattern on the mask with areas of the substrate surface,

(e) bringing the mask into direct contact with the photoresist layer in a manner so that only the weight of the mask rests on the photoresist layer,

(f) irradiating the photoresist layer through the mask,

(g) developing the photoresist layer to expose the selected area of the substrate surface, and

(h) coating the exposed area of the substrate surface with the metal film.

5. An apparatus for use in coating a selected area of a surface of a thin substrate with a metal film comprising

means for supporting the substrate with the surface to be coated exposed,

means for moving said supporting means in x-y-θ directions,

means for supporting a mask above said substrate surface, said mask supporting means being movable toward and away from said substrate so as to bring the mask into contact with a photoresist layer on the surface of the substrate,

means for directing a light through the substrate and the mask,

means for viewing the light after it passes through the mask, and

means for directing photoresist exposing radiation onto the mask.

4,623,609

PROCESS FOR FORMING PATTERNS USING IONIZING RADIATION SENSITIVE RESIST

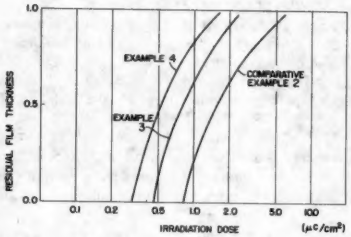
Yoshiyuki Harita, Kawasaki; Yoichi Kamoshida; Masashige Takatori, both of Yokohama, and Kunihiro Harada, Machida, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 546,462, Oct. 28, 1983, abandoned, which is a continuation-in-part of Ser. No. 397,769, Jul. 13, 1982, abandoned. This application May 20, 1985, Ser. No. 735,715

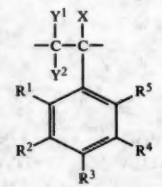
Claims priority, application Japan, Jul. 24, 1981, 56-116156; Jan. 29, 1982, 57-12685; Oct. 29, 1982, 57-189148

Int. Cl.[4] G03C *5/00*

U.S. Cl. 430—325 **13 Claims**



1. A process for forming patterns comprising (1) forming a coating film of an ionizing radiation sensitive resist on a substrate using said resist in the form of an organic solvent solution, (2) irradiating the desired parts of said coating film with ionizing radiation, (3) treating said coating film with a developing agent, and (4) treating said coating film with a rinsing agent, characterized in that said ionizing radiation sensitive resist is a polymer having a recurring unit represented by the general formula (A):



wherein X is a hydrogen atom, a methyl group or a halogen atom, and further wherein X is a halogen atom in at least 2% of the recurring units of the polymer; Y^1 and Y^2 are independently hydrogen atoms, methyl groups or halogen atoms, and further wherein Y^1or Y^2 is a halogen atom in at least 2% of the recurring units of the polymer; R^1, R^2, R^3, R^4 and R^5 are independently hydrogen atoms, alkyl groups having 1 to 3

carbon atoms, alkoxy groups having 1 to 3 carbon atoms, halogen atoms, haloalkyl groups having 1 to 3 carbon atoms or haloalkoxy groups having 1 to 3 carbon atoms, and further wherein at least one of R^1, R^2, R^3, R^4 and R^5 is either a haloalkyl or haloalkoxy group containing 1 to 3 carbon atoms in at least 3% of the recurring units of the polymer.

4,623,610

POSITIVE IMAGE-FORMING METHOD USING 4-METHYL-1-PENTENE POLYMER

Hiromi Yoshida, Tokyo; Masataka Miyamura, Kawasaki; Katsumi Funakoshi, Iwakuni, and Riichiro Nagano, Yamaguchi, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki and Mitsui Petrochemical Industries, Ltd., Tokyo, both of, Japan

Continuation of Ser. No. 102,916, Dec. 12, 1979, abandoned. This application Feb. 26, 1982, Ser. No. 353,001

Claims priority, application Japan, Dec. 12, 1978, 53-153418

Int. Cl.[4] G03C *5/00*

U.S. Cl. 430—326 **6 Claims**

1. In a method of forming a positive image on a semiconductor substrate which comprises the steps of applying a solution of positive image-forming material in a solvent to said semiconductor substrate, prebaking the resulting photosensitive layer to remove said solvent thereform, forming a latent image by exposure to ultra-violet rays or other forms of radiation, and then developing said photosensitive layer, the improvement comprising: said positive image-forming material consisting of a degradation product of 4-methyl-1-pentene homopolymer or a degradation product of a copolymer of 4-methyl-1-penetene and an α-olefin, said copolymer containing at least 80 mole percent of 4-methyl-1-pentene, said degradation product having an intrinsic viscosity of from 0.2 to 10.0 dl/g as measured in decalin at 135° C. and being soluble in not more than 100 times by weight of cyclohexene at 25° C.

4,623,611

PHOTOLITHOGRAPHIC STRIPPING METHOD FOR REMOVING CONTRAST ENHANCEMENT LAYER

Paul R. West, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 16, 1985, Ser. No. 691,829

Int. Cl.[4] G03C *5/00, 11/24;* **G03F** *7/26*

U.S. Cl. 430—329 **2 Claims**

1. A photolithographic stripping method which comprises,

(1) exposing to patterned UV light, a photoresist comprising a novolak photoresist layer and a contrast enhancement layer adjacent and on the photoresist layer, said contrast enhancement layer comprising aryl nitrone and a styrene-/allyl alcohol copolymer, where the contrast enhancement layer provides improved wall profiles and minimizes problems associated with reflections and defraction effects in the resulting exposed photoresist and

(2) substantially effecting the complete removal of the contrast enhancement layer from the photoresist without substantially altering or removing the photoresist immediately adjacent to the contrast enhancement layer, where the removal of the contrast enhancement layer from the photoresist is effected by spraying the contrast enhancement layer with toluene in the form of a mist, or immersing or spraying the contrast enhancement layer with a mixture of toluene and anisole having less than about 25% by weight of anisole.

4,623,612

METHOD OF DEVELOPING SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS

Toshihiro Nishikawa, and Hatsumi Tanemura, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 572,321, Jan. 20, 1984, abandoned. This application Oct. 21, 1985, Ser. No. 788,702

Claims priority, application Japan, Jan. 21, 1983, 58-8181

Int. Cl.[4] G03C *5/50*

U.S. Cl. 430—375 **18 Claims**

1. In a method of developing on imagewise exposed silver halide photographic light-sensitive materials comprising at least one spectrally sensitized silver halide emulsion layer on a support, the improvement wherein said spectrally sensitized silver halide emulsion layer contains core-shell type silver halide grains having a shell thickness of 25 to 150 Å wherein the core is not fogged, the surface of the core is subjected to chemical sensitization and the sufface of the shell is not subjected to chemical sensitization, wherein the developing solution used contains a sulfur containing solvent for silver halide, and wherein a positive image is formed sequentially by a first development comprising black and white photographic processing; a reversal processing; and a second development comprising color development processing.

4,623,613

METHOD OF PROCESSING LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC MATERIAL

Masao Ishikawa; Shigeharu Koboshi, and Satoru Kuse, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Dec. 18, 1985, Ser. No. 810,413

Claims priority, application Japan, Dec. 25, 1984, 59-271963

Int. Cl.[4] G03C *5/24, 7/40, 11/00*

U.S. Cl. 430—428 **12 Claims**

1. In a method of processing a light-sensitive silver halide photographic material by processing the light-sensitive silver halide photographic material with a processing solution having fixing ability and subsequently processing it with a water washing-substitutive stabilizing solution substantially without carrying out water washing, the improvement wherein the concentration of a sulfite in said water washing-substitutive stabilizing solution is controlled to be 1.0×10^{-5} mole/liter or more when the concentration of silver compounds in said water washing-substitutive stabilizing solution is from $\frac{1}{3}$ to 1/1000-fold of the concentration of silver compounds in the preceding bath.

4,623,614

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS

Masakazu Yoneyama; Yukio Maekawa; Shigeki Yokoyama, and Junichi Yamanouchi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 7, 1985, Ser. No. 763,111

Claims priority, application Japan, Aug. 7, 1984, 59-165081

Int. Cl.[4] G03C *1/84*

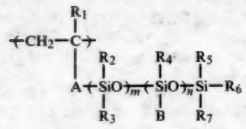
U.S. Cl. 430—523 **6 Claims**

1. A silver halide photographic light-sensitive element comprising:

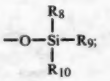
(a) a support having thereon at least one silver halide photographic light-sensitive emulsion layer;

(b) at least one light-insensitive surface layer on at least one side of said support, said surface layer comprising:

(i) a graft polymer having a component which comprises a silicone unit and a component having an affinity with a polymer used as a binder within said light-sensitive element, wherein the amount of said graft polymer is 0.001 to 1.0 g. per square meter of said photographic light-sensitive element, and wherein said silicone unit (graft component silicone) is represented by general formula (I):


(I)

wherein R_1 represents a hydrogen atom or a methyl group; R_2, R_3, R_4, R_5, R_6 and R_7, which may be the same or different, each represents an alkyl group, a substituted alkyl group, an aryl group, a substituted aryl group, or a cycloalkyl group, each having 1 to 20 carbon atoms; m is 0 or an integer of 1 to 400; n is 0 or an integer of 1 to 50; said m+n being 0 to 450; when m and n are 0, said R_5, R_6 and R_7 each represents



R_8, R_9 and R_{10} have the same meaning as aforesaid R_2, R_3 and R_4; A represents a divalent group; and B represents a substituted alkyl group; and

(c) at least one light-insensitive surface layer on at least one side of said support or a layer adjacent to a surface layer comprising an antistatic agent, wherein the amount of said antistatic agent is 0.1 to 1.0 g per square meter of said photographic light-sensitive element.

4,623,615

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS

Shigeki Yokoyama, Kanagawa, and Nobuhisa Sekiguchi, Shizuoka, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 9, 1984, Ser. No. 658,740

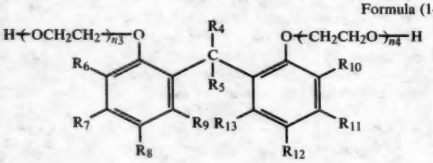
Claims priority, application Japan, Oct. 7, 1983, 58-188228

Int. Cl.[4] G03C *1/82*

U.S. Cl. 430—527 **13 Claims**

1. In a silver halide photographic light-sensitive element having at least one light-sensitive silver halide emulsion layer on a base, the improvement wherein said light-sensitive silver halide emulsion layer or another hydrophilic colloid layer on said base contains a polyoxyethylene type surfactant and a complex salt of divalent or tetravalent palladium, and wherein said polyoxyethylene type surfactant is represented by a member selected from formula (I-3)

Formula (I-3)



wherein R_7, R_9, R_{11} and R_{13} each represents a hydrogen atom, a substituted or unsubstituted alkyl group, an aryl group, an alkoxy group, a halogen atom, an acyl group, an amide group, a sulfonamide group, a carbamoyl group, or a sulfamoyl group; R_6, R_8, R_{10}, and R_{12} each represents a unsubstituted alkyl group, an aryl group, an alkoxy group, a halogen atom, an acyl group, an amide group, a sulfonamide group, a carbmoyl group, or a sulfamoyl group; R_4 and R_5 each represents a hydrogen atom, a substituted or unsubstituted alkyl group, an aryl group, or heteroaromatic ring; or R_4 and R_5, R_6 and R_7, R_8 and R_9, R_{10} and R_{11}, and R_{12} and R_{13} may form a substituted or unsubstituted ring by linking together; and n_3 and n_4 are each an average degree of polymerization of ethylene oxide within the range of from 2 to 50.

4,623,616

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Shun Takada; Takashi Kadowaki; Masao Sasaki; Toyoki Nishijima, and Kaoru Onodera, all of Odawara, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Mar. 26, 1985, Ser. No. 716,352

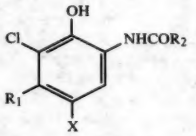
Claims priority, application Japan, Mar. 30, 1984, 59-64379

Int. Cl.[4] G03C *1/40, 1/30*

U.S. Cl. 430—545 **5 Claims**

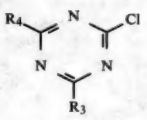
1. A silver halide photographic light-sensitive material comprising a support bearing thereon a silver halide emulsion layer containing a diffusionproof coupler and being treated with a hardening agent represented by Formula [II] and/or Formula [III] indicated below, said silver halide photographic light-sensitive material characterized in that said diffusionproof coupler is a coupler represented by Formula [I] indicated below:

Formula [I]

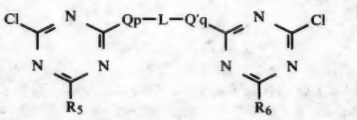


wherein R_1 denotes a straight or branched alkyl group having 2 to 4 carbon atoms; R_2 a ballast group; and X a hydrogen atom or a group capable of splitting off through reaction with the oxidation product of an aromatic primary amine type color developing agent.

Formula [II]



Formula [III]



wherein R_3 denotes a chlorine atom, a hydroxy group, an alkyl group, an alkoxy group, an amino group, an acylamino group, or a —OM group in which M denotes a monovalent metal atom; R_4 has the same meaning as R_3 except for the omission of said chlorine atom; R_5 and R_6 independently denote a chlorine atom, a hydroxy group, an alkyl group, an alkoxy group, or a —OM group in which M denotes a monovalent metal atom; Q and Q' independently denote a linking group —O—, —S—, or —NH—; L denotes an alkylene group or an arylene group; and p and q independently denote 0 or 1.

4,623,617

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Yutaka Kaneko, Sagamihara; Kenji Kadokura, Hachioji, and Toshihiko Kinura, Hino, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Japan

Filed Oct. 8, 1985, Ser. No. 785,507

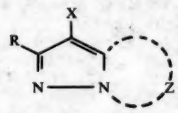
Claims priority, application Japan, Oct. 9, 1984, 59-213470; Dec. 28, 1984, 59-280486; Apr. 18, 1985, 60-85195

Int. Cl.[4] G03C *7/32, 7/26*

U.S. Cl. 430—551 **10 Claims**

1. A silver halide color photographic material containing a

magenta color image-forming coupler represented by the following formula (I) and a compound represented by the following formula (XI):



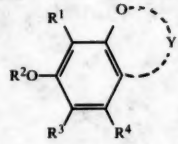
(I)

wherein

Z represents the group of nonmetallic atoms necessary for forming a nitrogen-containing heterocyclic ring, provided that the ring to be formed by said Z may have a substituent;

X represents a hydrogen atom or a substituent capable of leaving upon reaction with the oxidized product of a color developing agent; and

R represents a hydrogen atom or a substituent.



(XI)

wherein R^1 and R^4 each represents a hydrogen atom, a halogen atom, an alkyl group, an alkenyl group, an alkoxy group, an alkenyloxy group, a hydroxy group, an aryl group, an aryloxy group, an acyl group, an acylamino group, an acyloxy group, a sulfonamido group, a cycloalkyl group or an alkoxycarbonyl group;

R^2 represents a hydrogen atom, an alkyl group, an alkenyl group, an aryl group, an acyl group, a cycloalkyl group or a heterocyclic group;

R^3 represents a hydrogen atom, a halogen atom, an alkyl group, an alkenyl group, an aryl group, an aryloxy group, an acyl group, an acylamino group, an acyloxy group, a sulfonamide group, a cycloalkyl group or an alkoxycarbonyl group;

R^2 and R^3 may cooperate to form a 5- or 6-membered ring; and

Y represents the group of atoms necessary to form a chroman or cumaran ring.

4,623,618

SIMULTANEOUS QUANTITATIVE IMMUNOASSAY FOR DIFFERENT ANTIGENS OR ANTIBODIES

Kyuji Rokugawa, Ootawara, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 31, 1983, Ser. No. 547,353

Claims priority, application Japan, Nov. 5, 1982, 57-195115

Int. Cl.[4] C12Q *1/68;* G01N *33/54*

U.S. Cl. 435—6 **8 Claims**

1. An immunoassay for simultaneously quantifying a plurality of different kinds of antigens or antibodies, comprising the steps of:

(1) providing a plurality of microcapsules having on their outer surfaces an antibody or antigen specific to one kind of antigen or antibody of the plurality of kinds of antigens or antibodies to be quantified, the microcapsules being capable of being lysed by complement activity, each kind of the plurality of kinds of microcapsules containing within the microcapsule a different quantifiable substance which does not interact with another quantifiable substance contained in another kind of microcapsule, and is selective to the antigen or antibody to be quantified;

(2) mixing the plurality of kinds of the microcapsules, a complement, and a test sample which may contain at least one of the kinds of antigens or antibodies to be tested for; and

(3) quantifying the quantifiable substances released from the microcapsules simultaneously upon lysis by the complement activity, and wherein said microcapsules are formed of cells capable of containing said quantitatively determinable substance within the capsule defined by the cell membrane.

3. The immunoassay according to claim 1, wherein the quantifiable substance is selected from the group of a protein, an enzyme, a polysaccharide or a nucleic acid.

4,623,619

METHOD FOR THE DETERMINATION OF LIABILITY IN HUMAN INDIVIDUALS TO DEVELOP ATHEROSCLEROSIS

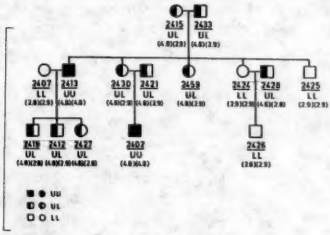
David Owerbach, and Jorn Nerup, both of Gentofte, Denmark, assignors to Nordisk Insulinlaboratorium, Gentofte, Denmark

Filed Feb. 18, 1983, Ser. No. 467,843

Claims priority, application Denmark, Mar. 3, 1982, 920/82

Int. Cl.[4] C12Q *1/68;* C12N *15/00*

U.S. Cl. 435—6 **6 Claims**



1. A method for the determination of liability in human individuals to develop atherosclerosis which comprises the following steps:

(a) providing a probe selected from the group consisting of

(i) cDNA complementary to the mRNA coding for the human insulin,

(ii) human genomic DNA containing the actual insulin gene,

(iii) DNA sequences of human genomic DNA located within 20×10^6 base pairs of the insulin gene in either direction;

(b) using said probe for restriction enzyme mapping of DNA from a human individual;

(c) examining the distribution of DNA fragments for the appearance of insertion sequences of approximately 1600 to 2200 base pairs (U alleles);

(d) the occurrence of said u allele indicating a liability for said individual to develop atherosclerosis.

4,623,620

ENUCLEATED GRANULOCYTES, THEIR PREPARATION AND USE

Dirk Roos, Amsterdam; Alwin A. Voetman, Badhoevedorp; Louis J. Meerhof, Hoogwoud, all of Netherlands, and Bertram Lubin, Oakland, Calif., assignors to Stichting Vrienden Van De Stichting Dr. Karl Landsteiner, Amsterdam, Netherlands

Filed Aug. 2, 1983, Ser. No. 519,563

Int. Cl.[4] G01N *33/53*

U.S. Cl. 435—7 **12 Claims**

1. A process for assaying antibodies against granulocytes in a sample, which comprises incubating the sample with enucleated granulocytes, and assaying the incubated sample to detect the formation of the product formed by the reaction of enucleated granulocytes and antibodies against granulocytes.

4,623,621
IMMUNOASSAY FOR PEPTIDE AND PROTEIN OLIGOMERS

Sidney Pestka, North Caldwell, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

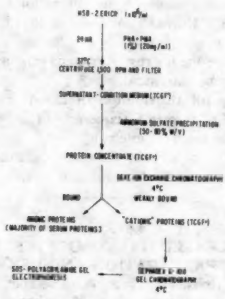
Continuation of Ser. No. 391,628, Jun. 24, 1982, abandoned. This application Sep. 24, 1984, Ser. No. 653,167
Int. Cl.[4] G01N *33/534, 33/535, 33/543*
U.S. Cl. 435—7 7 Claims

1. A method for the assay of oligomeric forms of a peptide or protein which comprises contacting a test solution with a monoclonal antibody coupled to a solid support, said monoclonal antibody being capable of binding specifically to an epitopic site which is present only once on said peptide or protein, whereby any monomeric or oligomeric form of said peptide or protein present in said test solution is bound to said solid supported monoclonal antibody; thereafter contacting said solid supported monoclonal antibody with a solution containing the same monoclonal antibody bearing a detectable label whereby said labeled monoclonal antibody will selectively bind to any oligomeric form of said peptide or protein bound to the solid supported monoclonal antibody; and measuring the amount of labeled monoclonal antibody bound to the solid support, which amount will be proportional to the amount of oligomeric form of said peptide or protein present in said test solution.

4,623,622
T-CELL GROWTH FACTOR AND METHOD OF MAKING SAME

David W. Anderson, Littleton, Colo., assignor to Eleanor Roosevelt Institute for Cancer Research, Inc., Denver, Colo.

Filed Jan. 25, 1983, Ser. No. 460,727
Int. Cl.[4] C12P *21/00;* C12N *5/00, 5/02;* C12R *1/91*
U.S. Cl. 435—68 8 Claims



1. A process for preparing T cell growth factor comprising:
(a) cloning and selecting a human ALL cell line from the cell culture identified as HSB-2-ERICR,
(b) culturing the cell line with a tissue culture medium;
(c) contacting the cells so obtained with an inducer which activates or stimulates the production of T cell growth factor,
(d) recovering the supernatant therefrom containing the T cell growth factor.

4,623,623
PROCESS FOR PRODUCING L-LYSINE BY FERMENTATION

Toshihide Nakanishi; Tomoki Azuma; Toshihiko Hirao; Kiyoji Hattori, and Minoru Sakurai, all of Hofu, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 405,404, Aug. 5, 1982, abandoned. This application Jun. 3, 1985, Ser. No. 740,549
Claims priority, application Japan, Nov. 13, 1981, 56-182095
Int. Cl.[4] C12P *13/08;* C12N *15/00, 1/20*
U.S. Cl. 435—115 3 Claims

1. A process for producing L-lysine, which comprises culturing a protoplast fusion strain H-3057 (FERM BP-148) obtained by protoplast fusion between *Corynebacterium glutamicum* H-3122 (FERM BP-150) and *Brevibacterium lactofermentum* H-3126 (FERM BP-152), a protoplast fusion strain H-3055 (FERM BP-147) obtained by protoplast fusion between *Corynebacterium glutamicum* H-3122 (FERM BP-150) and *Corynebacterium glutamicum* H-3119 (FERM BP-149), or *Corynebacterium glutamicum* H-3149 (FERM BP-158) in a nutrient medium, forming and accumulating L-lysine in the resulting culture liquor, and recovering the L-lysine therefrom.

4,623,624
ISOLATION OF PANCREATIN

Hans Schultze, Moorrege, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 23, 1983, Ser. No. 565,220
Claims priority, application Fed. Rep. of Germany, Dec. 30, 1982, 3248587; Dec. 30, 1982, 3248588
Int. Cl.[4] C12N *9/94, 9/64*
U.S. Cl. 435—186 5 Claims

1. A process for isolating pancreatin by autolysis of an aqueous pancreas tissue suspension, wherein the autolysis is carried out at below 30° C. with addition of up to 20% by weight of isopropyl alcohol, based on the suspension, at a pH of from 6.5 to 8.5, testing a sample of the autolyzed suspension to determine the sedimentation rate and stopping the autolysis as soon as a sample in 55–65% strength aqueous isopropyl alcohol shows a sedimentation rate, measured under gravity, of about 3–10 mm/1–3 minutes.

4,623,625
ENZYME EXTRACTION AND PURIFICATION PROCESSES

Robert K. Scopes, Melbourne, Australia, assignor to La Trobe University, Victoria, Australia

PCT No. PCT/AU84/00069, § 371 Date Dec. 12, 1984, § 102(e) Date Dec. 12, 1984, PCT Pub. No. WO84/04329, PCT Pub. Date Nov. 8, 1984
PCT Filed Apr. 19, 1984, Ser. No. 686,264
Claims priority, application Australia, Apr. 21, 1983, PF8995; Jan. 3, 1984, PG3049
Int. Cl.[4] C12N *9/04, 9/12*
U.S. Cl. 435—190 35 Claims

1. A process for the preparation of an enzyme extract containing glucose 6-phosphate dehydrogenase and derived from microorganism cells, which comprises subjecting *Zymomonas mobilis* bacterium cells to extraction with an extraction medium comprising a partially water-miscible organic solvent; a non-ionic surfactant; and lysozyme; under neutral to alkaline pH conditions to provide an extract containing said enzyme.

4,623,626

L-GLUTAMIC ACID OXIDASE AND ITS PRODUCTION

Hitoshi Kusakabe, and Yuichiro Midorikawa, both of Choshi, Japan, assignors to Yamasa Shoyu Kabushiki Kaisha, Chiba, Japan

Filed Jun. 28, 1983, Ser. No. 509,226
Claims priority, application Japan, Jun. 29, 1982, 57-112271
Int. Cl.[4] C12Q *1/26;* C12N *9/06;* C12R *1/465*
U.S. Cl. 435—191 3 Claims

1. An L-glutamic acid oxidase which is an L-amino acid oxidase having activity of oxidative deamination of the α-amino group of L-glutamic acid in the presence of water and oxygen to form α-ketoglutaric acid, ammonia and hydrogen peroxide; having a substrate specificity for L-glutamic acid substantially without acting on L-glutamine and L-histidine; and having the following properties:

(a) stable in the pH range from 5.5 to 10.5 under maintenance conditions of 37° C. and 60 minutes;

(b) stable in the temperature range of up to 65° C. under maintenance conditions of pH 5.5 and 15 minutes;

(c) optimum activity in the pH range from 7 to 8.5;

(d) is not inactivated by cupric chloride in a concentration of 1.0 mM at pH 7.4;

(e) contains 2 mols of flavin adenine dinucleotide per mol of the oxidase as a coenzyme; and

(f) a molecular weight of 135,000±10,000 as estimated by gel filtration.

4,623,627

MONOCLONAL ANTIBODY HAVING SPECIFICITY FOR THE DOUBLE-STRANDED CONFORMATION OF NATIVE DNA AND DIAGNOSTIC METHODS USING SAME

Chun-Ming Huang, Cupertino, and Stanley N. Cohen, Portola Valley, both of Calif., assignors to Cetus Corporation, Emeryville, Calif.

Filed Aug. 19, 1983, Ser. No. 524,596
Int. Cl.[4] C12N *5/00, 15/00;* C12Q *1/68;* G01N *33/577*
U.S. Cl. 435—240 1 Claim

1. Hybridoma ATCC HB 8329.

4,623,628

BINDER FOR LOW DENSITY LIPOPROTEINS

Nico Maaskant, Hengelo; Adriaan Bantjes, Enschede, and Hermanus J. M. Kempen, Leiden, all of Netherlands, assignors to Organon Teknika b.v., Boxtel, Netherlands

Filed Jun. 26, 1985, Ser. No. 748,951
Claims priority, application Netherlands, Jun. 27, 1984, 8402021
Int. Cl.[4] G01N *31/00*
U.S. Cl. 436—13 1 Claim

1. A process for the manufacture of a fiber shaped binder for low density lipoproteins (LDL), characterized in that a polyvinyl alcohol fiber is cross-linked by steeping the fiber in an acidified aqueous solution of glutardialdehyde, followed by washing with water and drying, sulphating with chlorosulphonic acid, washing to remove excess chlorosulphonic acid, steeping in an aqueous sodium hydroxide solution, and finally washing successively with water, a physiological buffer solution, and water, followed by drying, if required.

4,623,629

SOLID-PHASE IMMUNOASSAY SUPPORT AND METHOD OF USE THEREOF

Daniel Kerschensteiner, 76 Q Farm Rd., Hillsborough, N.J. 08876

Filed Oct. 31, 1983, Ser. No. 546,799
Int. Cl.[4] G01N *33/543*
U.S. Cl. 436—518 21 Claims

1. A method for the preparation of a solid-phase immunoassay support which comprises:

A. providing a preformed test tube liner defining a rounded, closed end and prepared from a film forming material selected from the group consisting of proteinaceous polymeric materials, polysaccharides, polyesters and polyamides,

B. contacting said test tube liner with a sufficient quantity of a coupling solution to render said test tube liner water-insoluble, said coupling solution comprising,

a fixative selected from the group consisting of alkali metal, alkaline earth metal sulfates, bicarbonates, chlorides; lower alkanols, polyols, and mixtures thereof,

a bifunctional coupling agent, and

a bioactive protein for participation as a reactant in said solid phase immunoassay, said biofunctional coupling agent being capable of bonding to said liner said bioactive protein.

4,623,630

USE OF UNCALCINED/PARTIALLY CALCINED INGREDIENTS IN THE MANUFACTURE OF SINTERED PELLETS USEFUL FOR GAS AND OIL WELL PROPPANTS

Jeremiah J. Fitzgibbon, LaFayette, La., assignor to Standard Oil Proppants Company, Dallas, Tex.

Continuation-in-part of Ser. No. 405,055, Aug. 4, 1982, Pat. No. 4,427,068, which is a continuation of Ser. No. 347,210, Feb. 9, 1982, abandoned. This application Sep. 30, 1983, Ser. No. 538,058
Int. Cl.[4] C04B *35/10*
U.S. Cl. 501—127 26 Claims

1. A composite, sintered, spherical pellet suitable for gas and oil well proppant which is prepared from materials consisting essentially of clay materials, bauxitic materials and alumina, wherein said materials include at least one uncalcined or partially calcined ingredient selected from the group consisting of clay materials, bauxitic materials and dust collector fines produced during the calcination of clay materials and bauxitic materials, and alumina, said pellet having on a dry weight basis an alumina-to-silica ratio from about 9:1 to about 1:1 and at least about 6.51 percent by weight of other than alumina and silica, said pellet having an apparent specific gravity of less than 3.30.

11. A sintered, spherical composite pellet suitable for use as gas and oil well proppant, said pellet having an Al_2O_3/SiO_2 dry weight basis ratio from about 9:1 to about 1:1, said pellet having an apparent specific gravity of less than 3.30 g/cc and at least about 6.51 percent by weight of other than Al_2O_3 and SiO_2, said pellet being made by a process including the steps of:

(a) Forming a particulate mixture from materials consisting essentially of clay materials, bauxitic materials and alumina wherein said materials include at least one uncalcined or partially calcined ingredient selected from the group consisting of clay materials, bauxitic materials and dust collector fines produced during the calcination of clay materials and bauxitic materials and alumina, having an average particle size of less than 15 microns in a high intensity mixture and at least about 6.51 percent on a dry weight basis other than Al_2O_3 and SiO_2;

(b) while stirring the mixture, adding sufficient water to cause formation of composite spherical pellets from the mixture;

(c) drying the pellets until less than three (3) weight percent free moisture remains in the pellets;

(d) furnacing the dried pellets at a furnace temperature ranging from about 1300° C. to about 1500° C. for a period sufficient to enable recovery of sintered, spherical, composite pellets having a bulk density from about 1.35 to 1.8 grams per cubic centimeter.

4,623,631

FILTRATION OF ZEOLITES

John A. Kostinko, Bel Air, Md., assignor to J. M. Huber Corporation, Locust, N.J.

Filed Apr. 19, 1984, Ser. No. 602,032
Int. Cl.[4] B01J 20/18
U.S. Cl. 502—60 11 Claims

1. A method for the filtration and washing of zeolite solids in their separation from aqueous slurries containing the solids which comprises filtering the zeolite solids to remove a major portion of the aqueous components of the slurry and provide a wet filter cake of the zeolite solid, then washing the filter cake with an aqueous solution, at least a portion of the aqueous solution comprising a dilute solution of salt, the salt being one which is effective to stabilize an aqueous slurry of the zeolite solids-aqueous solution mixture and to prevent flocculation, and recovering the washed filter cake.

4,623,632

CATALYTIC COMPOSITE FOR CONVERSION OF HYDROCARBONS AND THE METHOD OF PREPARATION AND USE THEREOF

Susan L. Lambert, Rolling Meadows; Russell W. Johnson, Villa Park; Randy J. Lawson, Arlington Heights, and Tery L. Barr, Northbrook, all of Ill., assignors to Uop Inc., Des Plaines, Ill.

Filed Nov. 5, 1984, Ser. No. 668,102
Int. Cl.[4] B01J 29/04
U.S. Cl. 502—74 12 Claims

6. A catalytic composite comprising an L-zeolite having deposited thereon sufficient surface-deposited potassium to provide a surface-deposited alkali metal index of from about 40 to about 500 and from about 0.01 to about 5.0 wt. % of a platinum component based on the weight of the L-zeolite, the platinum component and the surface-deposited potassium.

4,623,633

SHOCK CALCINED ALUMINOSILICATE ZEOLITES

Dean A. Young, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 572,158, Jan. 17, 1984, Pat. No. 4,581,214. This application Oct. 8, 1985, Ser. No. 785,463
Int. Cl.[4] B01J 29/28, 37/08
U.S. Cl. 502—85 20 Claims

1. A catalyst comprising a zeolite prepared by the process comprising:

(a) precalcining an aluminosilicate zeolite at a temperature below the temperature to which the zeolite is heated in step (b) but sufficiently high vaporize water and desorb volatile components;

(b) thermally shock calcining the precalcined alumino-silicate zeolite by rapidly increasing the temperature of said precalcined zeolite at a rate between about 3° F./second and about 200,000° F./second to a relatively high temperature between about 1600° F. and about 2100° F. and maintaining said relatively high temperature for a period of time between about 0.1 second and about 20 minutes, said period of time being sufficiently short to avoid substantial sintering; and

(c) cooling the thermally shock calcined alumino-silicate zeolite at a rate sufficiently rapid to avoid substantial sintering and substantial loss of catalystic activity from said shock calcining.

13. A catalyst as defined by claim 1 wherein said aluminosilicate zeolite comprises a crystalline aluminosilicate zeolite of the ZSM-5 type.

14. A catalyst as defined by claim 1 further comprising an inorganic refractory oxide component.

15. A catalyst as defined by claim 14 further comprising a hydrogenation component.

4,623,634

LOW TEMPERATURE CATALYSTS FOR METHANOL PRODUCTION

Richard S. Sapienza, 1 Miller Ave., Shoreham, N.Y. 11786; William A. Slegeir, 7 Florence Rd., Hampton Bays, N.Y. 11946; Thomas E. O'Hare, 11 Geiger Pl., Huntington Station, N.Y. 11746, and Devinder Mahajan, 14 Locust Ct., Selden, N.Y. 11784

Division of Ser. No. 710,879, Mar. 12, 1985, abandoned, which is a continuation-in-part of Ser. No. 581,935, Feb. 21, 1984, abandoned. This application Dec. 23, 1985, Ser. No. 812,708
Int. Cl.[4] B01J 31/12
U.S. Cl. 502—113 4 Claims

1. A catalyst used in the synthesis of methanol from carbon monoxide and hydrogen which comprises catalytic amounts in slurry form of a complex reducing agent of the type NaH—ROH—$M(OAc)_2$ wherein M is selected from the group consisting of Ni, Pd, and Co and R is a lower alkyl group containing from 1–6 carbon atoms, combined with a group VI metal carbonyl.

4,623,635

METHOD FOR THE PREPARATION OF HIGH ACTIVITY PALLADIUM BASED CATALYSTS

Christos Paparizos, Willowick; Wilfrid G. Shaw, Lyndhurst, and James L. Callahan, Wooster, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Apr. 18, 1985, Ser. No. 724,535
Int. Cl.[4] B01J 27/057, 31/00, 27/24, 21/08
U.S. Cl. 502—215 15 Claims

1. A method for the preparation of a palladium metal based catalyst having the formula

$$PdTe_aZn_dE_e$$

where

E is one or more metals from group IIA, IVA, VA, IB, VIIB or VIII; and

a, d and e are from about 0 to 3 with the proviso that at least d or $e \neq 0$,

comprising the steps of:

forming an aqueous solution of a palladium compound;

adding to said solution a powder of a reducing metal more electropositive than palladium and reducing the palladium to its metallic state on the surface of said reducing metal; and

separating the resulting catalyst from said solution.

4,623,636

SHOCK CALCINED CRYSTALLINE SILICA CATALYSTS

Dean A. Young, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 623,180, Jun. 21, 1984, Pat. No. 4,582,694. This application Oct. 8, 1985, Ser. No. 785,462
Int. Cl.[4] B01J 21/08
U.S. Cl. 502—232 22 Claims

1. A catalyst comprising a crystalline silica prepared by the process comprising:

(a) precalcining a microporous crystalline silica at a temperature below the temperature to which the microporous crystalline silica is heated in step (b) but sufficiently high to vaporize water and desorb volatile components;

(b) thermally shock calcining the precalcined microporous crystalline silica by rapidly increasing the temperature of said precalcined crystalline silica at a rate between about 1° F./second and about 200,000° F./second to a relatively high temperature between about 1900° F. and about 2300° F. and maintaining said relatively high temperature for a period of time between about 0.1 second and about 20 minutes, said period of time being sufficiently short to avoid substantial sintering; and

(c) cooling the thermally shock calcined crystalline silica at

a rate sufficiently rapid to avoid substantial sintering and substantial loss of catalytic activity from said shock calcining.

2. A catalyst as defined by claim **1** wherein said microporous crystalline silica comprises silicalite.

14. A catalyst as defined by claim **2** further comprising an inorganic refractory oxide component.

15. A catalyst as defined by claim **14** further comprising a hydrogenation component.

16. A catalyst as defined by claim **14** further comprising a promoter selected from the group consisting of phosphorus components, magnesium components, boron components, antimony components, arsenic components, and mixtures thereof.

4,623,637

PROCESS FOR PRODUCING A CATALYST FOR OXIDIZING CARBON MONOXIDE AND AIR FILTER PRODUCED BY THE PROCESS

Carl-Ernst van der Smissen, Lübeck, Fed. Rep. of Germany, assignor to Drägerwerk AG, Fed. Rep. of Germany

Filed Dec. 16, 1985, Ser. No. 809,510

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1984, 3445803; Dec. 11, 1985, 3543719

Int. Cl.[4] **B01J** *21/04, 23/64*

U.S. Cl. 502—333 **2 Claims**

1. A process for producing a catalyst for oxidizing carbon monoxide and with a carrier of aluminum oxide comprising, making the carrier out of high-purity α-aluminum oxide with percentage purity more than about 99%, steeping the carrier in an aqueous solution of ammonium vanadate for impregnation with 1% vanadium by weight, drying the impregnated carrier in a vacuum, then heating the impregnated carrier at approximately 200° C. to convert the ammonium vanadate into vanadium pentoxide, then steeping the carrier containing vanadium pentoxide in an aqueous solution of palladium chloride for impregnation with 0.5% palladium by weight, thereafter drying the carrier, treating the carrier with a heavily diluted hydrazine solution, the palladium chloride being reduced, decanting the hydrazine solution, and washing the impregnated carrier with water.

4,623,638

SILICA GEL LINKED TO A PHTHALOCYANINE COMPOUND AND A METHOD FOR TREATING POLYCYCLIC ORGANIC SUBSTANCES THEREWITH

Hikoya Hayatsu, Okayama; Masahide Nakano, Hirakata, and Yoshikazu Matsuo, Sakai, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Mar. 21, 1985, Ser. No. 714,675

Claims priority, application Japan, Mar. 27, 1984, 59-60262

Int. Cl.[4] **B01D** *15/00*

U.S. Cl. 502—401 **11 Claims**

1. Silica gel in which an organic group having phthalocyanine skeleton is chemically linked to a functional group reacted with the hydroxyl groups existing on the surface of the silica gel.

4,623,639

PEPTIDE DERIVATIVES

Cedric H. Hassall, Harpenden; William H. Johnson, Hitchin, and Noel A. Roberts, Harpenden, all of United Kingdom, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

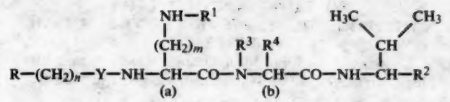
Filed Jul. 5, 1984, Ser. No. 628,070

Claims priority, application United Kingdom, Jul. 12, 1983, 8318855; May 8, 1984, 8411635

Int. Cl.[4] **A61K** *37/64;* **C07K** *5/08*

U.S. Cl. 514—18 **16 Claims**

1. A compound of the formula



wherein R represents a bridged cycloalkyl group selected from the group consisting of cyclooctyl, cyclodecyl, adamantyl and bicycloheptyl groups, R^1 represents an acyl group derived from an aliphatic or aromatic dicarboxylic acid, R^2 represents a hydrogen atom or a formyl group, R^3 represents a hydrogen atom and R^4 represents a methyl group or R^3 and R^4 together represent a trimethylene group, Y represents a carbonyl, sulphonyl or methylene group, m stands for an integer of 2 to 6 and n stands for zero, 1 or 2 and wherein the configuration at the carbon atoms designated as (a) and (b) is L,

and pharmaceutically acceptable salts thereof.

4,623,640

PEPTIDES

David de Wied, LH Bilthoven, Netherlands, assignor to Akzo N.V., Arnhem, Netherlands

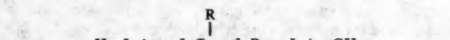
Filed Apr. 8, 1985, Ser. No. 720,704

Claims priority, application Netherlands, Apr. 13, 1984, 8401187

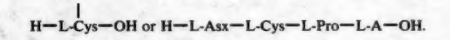
Int. Cl.[4] **A61K** *37/02;* **C07K** *5/10*

U.S. Cl. 514—18 **7 Claims**

1. Peptide having the general formula:



wherein A represents Arg, Lys or Leu and R represents the group



4,623,641

METHOD OF TREATING ULCERS AND EROSIONS IN THE GASTROINTESTINAL SYSTEM USING PGI_2-METHYL ESTER-BETA CYCLODEXTRIN INCLUSION COMPLEXES

József Szejtli; Magdolna Szejtli née Rengei; György Cseh, and István Stadler, all of Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T., Budapest, Hungary

Continuation of Ser. No. 623,395, Jun. 22, 1984, abandoned. This application Sep. 9, 1985, Ser. No. 774,177

Int. Cl.[4] **A61K** *31/70*

U.S. Cl. 514—58 **9 Claims**

1. A method of treating an ulcer in a patient which comprises the step of orally administering to said patient a pharmaceutically effective amount of a PGI_2-methyl ester-beta-cyclodextrin complex wherein the amount of the PGI_2-methyl ester constitutes 1 to 15% by weight of the complex.

4,623,642
NOVEL N-PHOSPHORYL- OR N-THIOPHOSPHORYL-N'S-TRIAZINYL-FORMAMIDINES

Odd Kristiansen, Möhlin; Jozef Drabek, Oberwil, and Victor Flück, Binningen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 690,790, Jan., 1985, abandoned. This application Dec. 12, 1985, Ser. No. 808,225

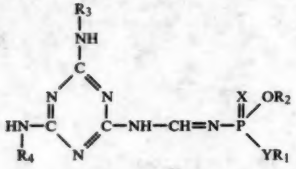
Claims priority, application Switzerland, Jan. 20, 1984, 247/84; Jan. 20, 1984, 248/84; Nov. 30, 1984, 5712/84

The portion of the term of this patent subsequent to Sep. 3, 2002, has been disclaimed.

Int. Cl.[4] **C07D** *251/70;* **A01N** *43/68, 59/26;* **C07F** *0/65*

U.S. Cl. 514—84 **10 Claims**

1. An N-phosphoryl- or N-thiophosphoryl-N'-s-triazinyl-formamidine of the formula I



(I)

wherein

R_1 and R_2 independently of one another are each C_1–C_{20}-alkyl, or phenyl unsubstituted or substituted by halogen atoms,

R_3 is C_1–C_6-alkyl,

R_4 is hydrogen, C_1–C_6-alkyl or C_3–C_6-cycloalkyl, or

R_3 is C_3–C_6-cycloalkyl and

R_4 is C_1–C_6-alkyl or C_3–C_6-cycloalkyl, and

X and Y are each oxygen or sulfur.

10. A method of controlling insects, phytopathogenic mites and ticks of the order acarina on animals and plants and in the soil, which method comprises applying thereto or to the locus thereof an effective amount of a compound according to claim 1.

4,623,643
PENEM DERIVATIVES

Marco Alpegiani; Angelo Bedeschi; Maurizio Foglio; Giovanni Franceschi, and Ettore Perrone, all of Milan, Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

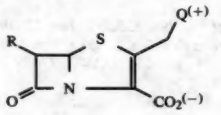
Continuation-in-part of Ser. No. 481,924, Apr. 4, 1983, Pat. No. 4,577,016. This application Jun. 10, 1985, Ser. No. 742,859

Claims priority, application United Kingdom, Jun. 29, 1984, 8416652

Int. Cl.[4] **C07D** *499/00;* **A61K** *31/425*

U.S. Cl. 514—196 **7 Claims**

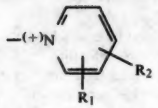
1. A compound of the following formula (I)



wherein

R is a C_1–C_3 alkyl group substituted by a hydroxy group;

$Q^{(+)}$ represents a group



wherein R_1 is C_1–C_4 alkyl group either unsubstituted or substituted by a group —C≡N, and R_2 is hydrogen or C_1–C_4 alkyl.

4,623,644
ACYLATION OF TIRANDAMYCIC, STREPTOLIC AND SORBIC ACIDS TO CEPHALOSPORIN AND PENICILLIN NUCLEI

Fritz Reusser, Portage, Mich., and Kenneth L. Rinehart, Jr., Champaign, Ill., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Aug. 7, 1985, Ser. No. 763,392

Int. Cl.[4] **A61K** *31/43, 31/545;* **C07D** *499/76, 501/14*

U.S. Cl. 514—196 **7 Claims**

1. A compound selected from the group consisting of:

(a) tirandamycylpenicillin;

(b) streptolylpenicillin;

(c) sorbylcephalosporin;

(d) tirandamycylcephalosporin;

(e) streptolylcephalosporin;

and a pharmaceutically acceptable salt thereof.

7. A method of treating bacterial infections in animals in need thereof which comprises administering to said animals an effective amount of a compound selected from the group consisting of:

(a) tirandamycylpenicillin;

(b) streptolylpenicillin;

(c) sorbylcephalosporin;

(d) tirandamycylcephalosporin;

(e) streptolylcephalosporin;

and a pharmaceutically acceptable salt thereof.

4,623,645
SUBSTITUTED CEPHALOSPORIN SULFOXIDES AS ANTI-INFLAMMATORY AND ANTIDEGENERATIVE AGENTS

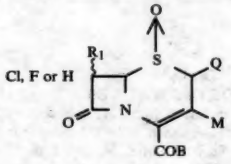
James B. Doherty, New Milford; Bonnie M. Ashe, Scotch Plains; Paul E. Finke, Metuchen; Raymond A. Firestone, Fanwood; Shrenik K. Shah, Clark, and Morris Zimmerman, Watchung, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Apr. 18, 1983, Ser. No. 485,979

Int. Cl.[4] **C07D** *501/20;* **A61K** *31/545*

U.S. Cl. 514—200 **10 Claims**

1. A pharmaceutical composition for treating elastase-mediated conditions in a mammalian species comprising a non-toxic pharmaceutical carrier and an effective amount of a compound of structural formula:



wherein M is:

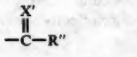
() hydrogen;

(2) trifluoromethyl;

(3) chloro or fluoro;

(4) —COOH;

(5) —CHO;
(6) —CH_2A wherein A represents
(a) hydrogen;
(b) halo;
(c) hydroxy;
(d) alkoxy;
(e) phenyloxy;
(f) phenylalkoxy;
(g) unsubstituted or substituted mercapto of formula ZR_5 wherein R_5 is H, C_{1-6}alkyl, phenyl, benzyl, or alkenyl;
(h) —$SCOR_5$, or —SCOOR or $SC(S)OR_5$, —SOR_5 or —SO_2R_5 wherein R_5 is as previously defined; and R is C_{1-6}alkyl;
(i) alkanoyloxy or phenylcarbonyloxy;
(j) a substituted or unsubstituted amino or amido group selected from a group consisting of —NH_2, —$CONH_2$, —NHR, —$N(R)_2$, —CONHR, and —$CON(R)_2$, wherein R is C_{1-6}alkyl;
(k) 3-(hydroxycarbonyl)propanoyloxy;
R_1 is
(1) hydroxy;
(2) —SH, —SOR, or —SO_2R wherein R is C_{1-6}alkyl;
(3) OR'_1 wherein R'_1 is C_{1-6}alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, phenyl or phenylalkyl;
(4) SR'_1 wherein R'_1 is as previously defined;
(5) cyano;
(6)



wherein X' is oxygen or sulfur; R'' is H, halo, OH, SH, OR, SR, NHR, R, phenyl, phenylalkyl, phenyloxy, phenylalkoxy, phenylthio, phenylalkylthio or $N(R)_2$ where R is C_{1-6}alkyl or
(7) fluoro or chloro;
B is OB_1 or NB_2B_3 wherein B_1 and B_2 independently are:
(a) straight or branched chain alkyl having from 1 to 20 carbon atoms;
(b) phenyl;
(c) cycloalkyl having from 3 to 8 carbon atoms;
(d) alkenyl having from 2 to 20 carbon atoms;
(e) cycloalkenyl having from 5 to 8 carbon atoms;
(f) alkynyl having from 2 to 20 carbon atoms;
(g) alkoxy alkyl having from 2 to 20 carbon atoms;
(h) phenylalkyl or alkylphenyl;
(i) loweralkenylalkyl;
(j) loweralkanoylalkyl;
(k) loweralkanoyloxyalkyl;
(l) loweralkanoyl;
B_3 is B_1 or hydrogen; and
Q is
(1) hydrogen;
(2) C_{1-6}alkyl;
(3) haloC_{1-6}alkyl;
(4) hydroxy C_{1-6}alkyl;
(5) substituted or unsubstituted C_{1-6}alkyl methylene, phenylmethylene, or phenylthiomethylene;
(6) C_{1-6}alkoxy C_{1-6}alkyl;
(7) benzyl;
(8) phenylthio C_{1-6}alkyl, phenylsulfinyl C_{1-6}alkyl or phenylsulfonyl C_{1-6}alkyl;
(9) phenoxy C_{1-6}alkyl; or
(10) phenylamino C_{1-6}alkyl.

4,623,646

PAF-ANTAGONISTIC DIAZEPINES, METHODS OF USE

Jorge Casals-Stenzel, Mainz; Karl-Heinz Weber, Gau-Algesheim; Gerhard Walther, Bingen am Rhein; Albrecht Harreus, and Gojko Muacevic, both of Ingelheim am Rhein, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim KG, Ingelheim am Rhein, Fed. Rep. of Germany

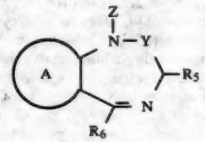
Filed Oct. 1, 1985, Ser. No. 782,648

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1984, 3435974

Int. Cl.[4] A61K *31/55*

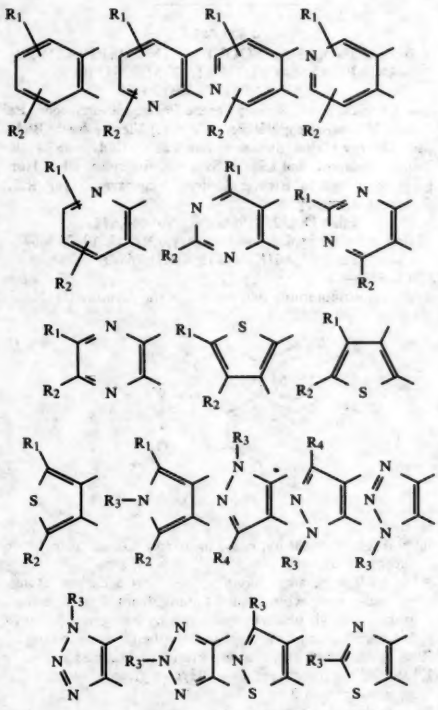
U.S. Cl. 514—220 **8 Claims**

1. A method of treating an individual having a disorder responsive to PAF-antagonist activity which method comprises treating said individual with a therapeutically effective amount of a compound of formula

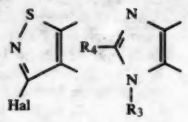


(I)

wherein
A is an anellated ring of the following formula



-continued



R_1 and R_2, are each independently hydrogen, a C_1–C_8 straight-chained or branched alkyl, alkenyl or alkynyl optionally mono- or polysubstituted by halogen, hydroxy, alkoxy, alkylmercapto, amino, alkylamino, dialkylamino, alkylcarbonyl, alkyloxycarbonyl or an acid amide group; a saturated carbocyclic or heterocyclic ring condensed on, which may contain oxygen, sulphur or nitrogen as a heteroatom while the nitrogen-containing ring may carry an alkyl group at the nitrogen atom; halogen, trifluoromethyl, nitro, cyano, optionally substituted amino, alkylmercapto, alkylcarbonyl, alkoxy, alkyloxycarbonyl or an acid amide group;

R_3 and R_4, are each independently hydrogen, a C_1–C_8 straight-chained or branched alkyl, alkenyl or alkynyl optionally mono- or polysubstituted by halogen, hydroxy, alkoxy, alkylmercapto, amino, alkylamino, dialkylamino, alkylcarbonyl, alkyloxycarbonyl, cyano or an acid amide group;

R_5 and Z are each independently hydrogen, a C_1–C_8 straight-chained or branched alkyl, alkenyl or alkynyl optionally mono- or polysubstituted by halogen, hydroxy, alkoxy, alkylmercapto, amino, alkylamino, dialkylamino, alkylcarbonyl, alkyloxycarbonyl or an acid amide group;

R_6 is phenyl, optionally substituted, by methyl, methoxy, halogen, nitro or trifluoromethyl, or R_6 can be thienyl or α-pyridyl;

Y is CO, CS or CH_2; and non-toxic, pharmaceutically acceptable acid addition salts thereof.

4,623,647

[1,3]OXAZINO[4,3-A]-ISOQUINOLINE DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Gábor Bernáth; Jenö Kóbor; Ferenc Fölöp, all of Szeged; Pal Sohár, Harmatcsepp; Pál Perjési, Pecs; Elemér Ezer, Budapest; György Hajós, Budapest; Éva Pálosi, Budapest; László Denes, Budapest, and László Szporny, Budapest, all of Hungary, assignors to Richter Gedeon Vegyeszeti Gyar R.T., Budapest, Hungary

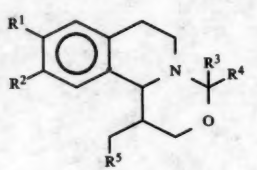
Filed Oct. 25, 1984, Ser. No. 664,844

Claims priority, application Hungary, Oct. 25, 1983, 3654

Int. Cl.[4] A61K *31/535;* **C07D** *265/34*

U.S. Cl. 514—228 **7 Claims**

1. oxazinoisoquinoline derivatives of the formula (I)



(I)

wherein

R^1 and R^2 represent hydroxyl or alkoxy having from 1 to 6 carbon atoms,

R^3 is hydrogen, alkyl having from 1 to 8 carbon atoms, cycloalkyl or cycloalkenyl having from 3 to 6 carbon atoms, phenyl, phenyl substituted by halogen, alkoxy of 1–4 carbons or nitro, C_1–C_4-alkyl phenyl or heteroaryl,

R^4 is hydrogen or alkyl having from 1 to 4 carbon atoms, or

R^3 and R^4 together form a $-(CH_2)_n-$ group, in which n is an integer from 3 to 7,

R^5 is hydroxyl, halogen or an

group, in which

R^6 is phenyl,

X is oxygen or sulfur,

and salts thereof.

6. A pharmaceutical composition comprising as active ingredient an effective amount of at least one compound of formula (I), as defined in claim 1, or a physiologically acceptable salt thereof, in association with a pharmaceutical carrier and/or excipient.

4,623,648

1-AZAXANTHONE FOR USE AS THERAPEUTIC AGENT AS AN ANTIPYRETIC, ANALGESIC, ANTI-INFLAMMATORY AND BRONCHODILATOR

Miquel Marquez Perez; Ricardo Matas Docampo; José M. Puigmarti Codina; José Repolles-Moliner, and Jorge Serra Sola, all of Barcelona, Spain, assignors to Lacer, S.A., Barcelona, Spain

Continuation of Ser. No. 420,092, Sep. 20, 1982, abandoned. This application Nov. 5, 1984, Ser. No. 668,179

Claims priority, application European Pat. Off., Sep. 25, 1981, 81107651.2

Int. Cl.[4] A61K *31/435;* **C07D** *491/147*

U.S. Cl. 514—291 **9 Claims**

1. A method of reducing fever in a mammal in need of said treatment, which comprises administering to said mamal, an atipyretic effective amount of 1-azaxanthone.

3. A method of treating pain or inflammation in a mammal in need of said treatment which comprises administering to said mammal an analgesic or anti-inflammatory effective amount of 1-azaxanthone.

4,623,649

SUBSTITUTED β-CARBOLINES, AND USE THEREOF AS MEDICINAL AGENTS

Andreas Huth; Ralph Schmiechen; Dieter Rahtz; Dieter Seidelmann, all of Berlin, Fed. Rep. of Germany, and Claûs T. Braestrûp, Roskilde, Denmark, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

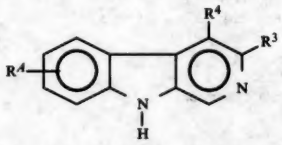
Filed Sep. 26, 1984, Ser. No. 654,594

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1983, 3335323

Int. Cl.[4] A61K *31/33;* **C07D** *471/04*

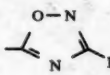
U.S. Cl. 514—292 **30 Claims**

1. A substituted β-carboline of the formula

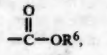


wherein

R^3 is (a) oxadiazolyl of the formula



wherein R^5 is lower alkyl of up to 3 carbon atoms, or (b)



wherein R^6 is hydrogen or lower alkyl of up to 3 carbon atoms;

R^4 is hydrogen, lower alkyl of up to 3 carbon atoms, or $-CH_2OR^9$, wherein R^9 is lower alkyl of up to 3 carbon atoms;

R^A is (a) phenyl, (b) alkenyl, cycloalkyl or cycloalkenyl each of 2–10 carbon atoms, (c) one of said (b) groups substituted by formyl, OH, O-alkyl of up 3 carbon atoms or phenyl, wherein when R^A is cycloalkyl or cycloalkenyl, a CH_2-group can be replaced by tetrahydrofuranyl or a cyclohexanone group.

18. A method of treating an indication in a patient which can be treated by an agent having an affinity to benzodiazepine receptors comprising administering to the patient an anxialytically or anticonvulsant effective amount of a compound of claim **1**.

4,623,650

ANTIBIOTIC DERIVATIVES OF 7-PHENYL-1,4-DIHYDRO-4-OXO-3-QUINOLINECARBOXYLIC ACIDS

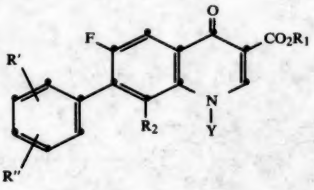
Paul J. Gilligan, New Haven; Paul R. McGairk, Gales Ferry, both of Conn., and Michael J. Witty, Dover, Great Britain, assignors to Pfizer Inc., New York, N.Y.

Filed Dec. 6, 1984, Ser. No. 679,150

Int. Cl.[4] A61K *31/47, 31/537;* **C07D** *215/18*

U.S. Cl. 514—312 **17 Claims**

1. A compound selected from those of the formula:



wherein

R^1 is hydrogen, alkyl of 1 to 6 carbon atoms, benzyl or a pharmaceutically acceptable cation;

R^2 is hydrogen or fluoro;

Y is alkyl, haloalkyl or polyhaloalkyl of 1 to 3 carbon atoms, hydroxyethyl, cyclopropyl, vinyl, allkyl, phenyl, 4-hydroxyphenyl or 4-fluorophenyl;

R′ is hydrogen, alkylsulfinyl or alkylsulfonyl of 1 to 4 carbon atoms, hydroxy, hydroxyalkyl of 1 to 3 carbon atoms, amino, aminoalkyl of 1 to 3 carbon atoms, formamido, alkanoylamino of 2 or 3 carbon atoms, aminosulfonyl, nitro, formyl, N-(N′,N′-dimethylformamidino); and

R″ is hydrogen, 3-hydroxy or 3-chloro; provided that R′ and R″ are not both hydrogen.

4,623,651

CARDIOTONIC HETEROCYCLOCARBONYL- AND ACETYL-THIAZOLONES

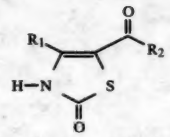
J. Martin Grisar, Wissembourg, France; Richard C. Dage, and Richard A. Schnettler, both of Cincinnati, Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Filed Oct. 15, 1985, Ser. No. 787,225

Int. Cl.[4] A61K *31/44, 31/425;* **C07D** *409/00*

U.S. Cl. 514—342 **21 Claims**

1. A thiazolone of the formula



wherein

is a hydrogen or $(C_1–C_4)$alkyl group and

R_2 is a pyridyl or pyridylmethyl group optionally substituted with a member of the group consisting of a $(C_1–C_4)$alkyl, $(C_1–C_4)$alkoxy, $(C_1–C_4)$alkylthio, $(C_1–C_4)$alkylsulfinyl, $(C_1–C_4)$alkylsulfonyl, carboxy, carb $(C_1–C_4)$alkoxy, halogen, trifluoromethyl and cyano, or R_2 is a furanyl, furanylmethyl, thienyl or thienylmethyl group.

8. A method of enhancing myocardial contractile force in a patient in need thereof which comprises administering to the patient an effective amount of a thiazolone of claim **1**.

4,623,652

ESTERS OF THIADIAZOLE OXYPROPANOLAINE DERIVATIVES AND PHARMACEUTICAL USES

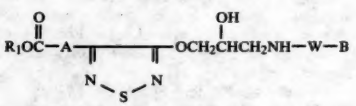
Paul W. Erhardt, Long Valley, N.J., and William L. Matier, Libertyville, Ill., assignors to American Hospital Supply Corporation, Evanston, Ill.

Continuation-in-part of Ser. No. 580,295, Feb. 21, 1984, abandoned, which is a continuation of Ser. No. 320,772, Nov. 12, 1981, abandoned. This application Jan. 16, 1985, Ser. No. 691,787

Int. Cl.[4] A61K *31/41;* **C07D** *285/10*

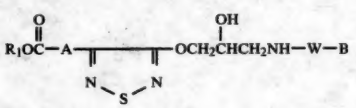
U.S. Cl. 514—326 **5 Claims**

1. A compound of the formula



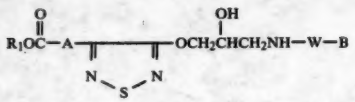
wherein R_1 is alkyl of from 1 to about 6 carbon atoms; A is alkylene of from 1 to about 5 carbon atoms; W is alkylene of from 1 to about 6 carbon atoms; and B is $—NR_2COR_3$, wherein R_2 is hydrogen and R_3 may be hydrogen, alkyl of from 1 to about 6 carbon atoms, cycloalkyl of from 3 to about 8 carbon atoms, phenyl and phenyl substituted with alkyl of from 1 to about 4 carbon atoms; and the pharmaceutically acceptable salts thereof.

2. A method for the treatment or prophylaxis of cardiac disorders in a mammal comprising administering to such mammal a short-acting β-blocking compound of the formula



wherein R_1 is alkyl of from 1 to about 6 carbon atoms, A is alkylene of from about 1 to about 5 carbon atoms; W is alkylene of from 1 to about 6 carbon atoms; and B is $—NR_2COR_3$, wherein R_2 is hydrogen and R_3 may be hydrogen, alkyl of from 1 to about 6 carbon atoms, cycloalkyl of from 3 to about 8 carbon atoms, phenyl and phenyl substituted with alkyl of from 1 to about 4 carbon atoms; and the pharmaceutically acceptable salts thereof.

5. A method of treating glaucoma or lowering intraocular pressure in a mammal, which comprises topically applying to the eye of said mammal an intraocular pressure-lowering effective amount of a compound of the formula



wherein R_1 is alkyl of from 1 to about 6 carbon atoms; A is alkylene of from 1 to about 5 carbon atoms; W is alkylene of from 1 to about 6 carbon atoms; and B is $—NR_2COR_3$, wherein R_2 is hydrogen and R_3 may be hydrogen, alkyl of from 1 to about 6 carbon atoms, cycloalkyl of from 3 to about 8 carbon atoms, phenyl and phenyl substituted with alkyl of from 1 to about 4 carbon atoms, and the pharmaceutically acceptable salts thereof.

4,623,653

FUNGICIDAL COMPOSITIONS EMPLOYING SYNERGISTIC MIXTURES OF A SUBSTITUTED 1-HYDROXYETHYL-TRIAZOLE AND TRIADIMEFON

Wilhelm Brandes, Leichlingen; Gerd Hänssler, Leverkusen; Paul Reinecke, Leverkusen; Hans Scheinpflug, Leverkusen, and Graham Holmwood, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 27, 1984, Ser. No. 644,749

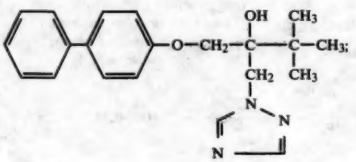
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1983, 3333412

Int. Cl.[4] A01N *43/64*

U.S. Cl. 514—383 **1 Claim**

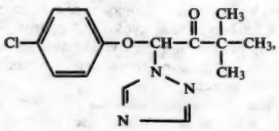
1. A fungicidal composition comprising a fungicidally effective amount of a substituted 1-hydroxyethyl-triazole of the formula

(i)



and

(ii) a derivative of a triazole of the formula



wherein the weight ratio of (i):(ii) is 1:1.

4,623,654

FUNGICIDAL TRIAZOLE ETHANOL COMPOUNDS

Keith P. Parry, Maidenhead; William G. Rathmell, Wokingham, and Paul A. Worthington, Maidenhead, all of England, assignors to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 124,253, Feb. 25, 1980. This application Oct. 12, 1984, Ser. No. 660,364

Claims priority, application United Kingdom, Mar. 7, 1979, 7908003; Sep. 21, 1979, 7932819

Int. Cl.[4] A01N *43/653*; C07D *249/08*

U.S. Cl. 514—383 **3 Claims**

1. 1-(1,2,4-Triazol-1-yl)-2-(o-chlorobenzyl)-3,3-dimethylbutan-2-ol, or an acid addition salt or metal complex thereof.

3. A method of combatting fungal diseases in a plant, which method consists essentially of the step of applying to the plant, to seed of the plant or to the locus of the plant or seed a compound, salt or complex according to claim **1**.

4,623,655

FUNGICIDAL IMINOMETHYL-AZOLYL DERIVATIVES

Herbert Gayer, Monheim; Paul Reinecke, Leverkusen; Wilhelm Brandes, Leichlingen, and Gerd Hänssler, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

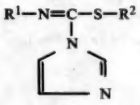
Filed Nov. 29, 1984, Ser. No. 676,161

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1983, 3345899

Int. Cl.[4] A01N *43/50, 43/653*; C07D *233/61, 249/08*

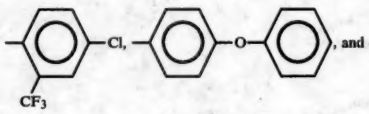
U.S. Cl. 514—399 **14 Claims**

1. An iminomethyl-imidazolyl derivative of the formula

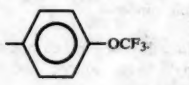


in which

R^1 is phenyl or substituted phenyl selected from



and



and

R^2 is alkyl with 1 to 12 carbon atoms, substituted alkyl with 1 to 12 carbon atoms, the substituents being selected from phthalimido, halogen, cycloalkyl with 3 to 6 carbon atoms, cycloalkyl with 2 to 6 carbon atoms the cycloalkyl ring being interrupted by oxygen, and the groupings $R^3O—$, $R^3—CO—O—$, $R^3O—CO$, $R^3—CO—$ and $(R^4O)(R^5O)CR^6$, or

R^2 is alkenyl with 3 to 6 carbon atoms, alkinyl with 3 to 6 carbon atoms, halogenoalkenyl with 3 to 6 carbon atoms and 1 to 3 halogen atoms, or is cycloalkyl with 3 to 6 carbon atoms, or is cycloaklyl with 3 to 6 carbon atoms the cycloalkyl ring being interrupted by oxygen and a keto group, or is phenyl or substituted phenyl, the substituents being selected from halogen and alkyl with 1 to 4 carbon atoms,

R^3, R^4 and R^5 each independently is alkyl with 1 to 6 carbon atoms, and

R^6 is hydrogen or alkyl with 1 to 4 carbon atoms, or

an addition product thereof with an acid or metal salt.

11. A method of combating fungi which comprises applying to such fungi or to a fungus habitat a fungicidally effective amount of a compound or addition product according to claim **1**.

4,623,656

METHOD FOR INHIBITING MONOAMINE OXIDASE-A AND TREATING DEPRESSION BY ADMINISTERING 3-N-METHYL-THIOXANTHEN-9-ONE CARBOXAMIDE 10,10-DIOXIDE

Morton Harfenist, Rte. 6, Box 405, Chapel Hill, N.C. 27514, and Charles T. Joyner, Rte. 8, Box 183H, Raleigh, N.C. 27612

Continuation-in-part of Ser. No. 688,718, Jan. 4, 1985, abandoned. This application Feb. 25, 1985, Ser. No. 704,744

Claims priority, application United Kingdom, Jan. 5, 1984, 8400201

Int. Cl.[4] A61K *31/39*

U.S. Cl. 514—437 **3 Claims**

1. A method of inhibiting monoamine oxidase-A in a mammal identified as being in need of inhibition of monoamine oxidase-A, comprising administration to said mammal of an amount of 3-N-methylcarbamoylthioxanthen-9-one 10,10-dioxide sufficient to inhibit the monoamine oxidase-A.

4,623,657

SPIRO [BENZOFURAN-2(3H),1'-CYCLOHEPTANE]S AND THEIR THERAPEUTIC USE

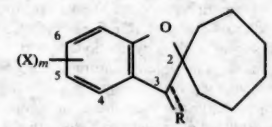
Edward J. Glamkowski, Warren, and Frederick J. Ehrgott, Jr., Piscataway, both of N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Filed Sep. 5, 1985, Ser. No. 772,974

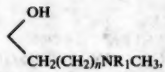
Int. Cl.[4] A61K *31/34;* **C07D** *307/94*

U.S. Cl. 514—462 **50 Claims**

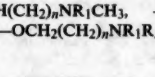
1. A compound of the formula



wherein each X is independently H, halogen, loweralkyl, loweralkoxy or OH; m is 1 or 2; and R is —H, =O,



$=CH(CH_2)_nNR_1CH_3$, $-CH_2(CH_2)_nNR_1R_2$, $=N-OH$, $=N-OCH_2(CH_2)_nNR_1R_3$,



$=N-OCH_2CHOHCH_2NR_1R_3$, $-NR_2R_3$, $-OH$ or $-OCH_2(CH_2)_nNR_1R_2$, n being 1 or 2, R_1 being loweralkyl, R_2 being H, loweralkyl, loweralkanoyl, aryllowerlkyl, aryllowerlkanoyl, diaryllowerlkyl, diaryllowerlkanoyl, $-CO_2C_2H_5$ or —CN and R_3 being H, loweralkyl, aryllowerlkyl or diaryllowerlkyl or a pharmaceutically acceptically acceptable acid addition salt thereof, the term aryl in each occurrence signifying a phenyl group having 0, 1, 2 or 3 substituents each of which being independently loweralkyl, loweralkoxy, halogen or CF_3.

47. A method of treating a patient in need of relief from high blood pressure which comprises administering to the patient an effective amount of the compound as defined in claim **1**.

4,623,658

PESTICIDAL BENZOYLUREA COMPOUNDS

Martin Anderson, Whitstable, England, assignor to Shell Oil Company, Houston, Tex.

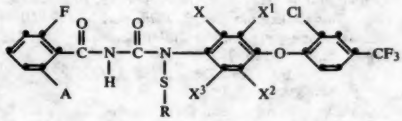
Continuation-in-part of Ser. No. 719,791, Apr. 4, 1985, and Ser. No. 763,584, Aug. 8, 1985, abandoned. This application Feb. 3, 1986, Ser. No. 825,172

Claims priority, application United Kingdom, Apr. 10, 1984, 8409240; Aug. 17, 1984, 8420930; Oct. 4, 1985, 8524545

Int. Cl.[4] C07C *145/04;* **A01N** *47/34*

U.S. Cl. 514—482 **15 Claims**

1. A compound of the formula:



wherein A is fluorine or chlorine, X, X^1, X^2 and X^3 each is hydrogen or fluorine, R is a moiety $—C(O)OR^1$, or $—NR^2R^3$, in which R^1 and R^2 each is optionally substituted alkyl, optionally substituted cycloalkyl or optionally substituted phenyl, R^3 is optionally substituted alkyl, optionally substituted cycloalkyl optionally substituted phenyl, or is a moiety $—C(O)R^4$, $—C(O)OR^4$ or $—SO_2R^4$ wherein R^4 is optionally substituted alkyl, optionally substituted cycloalkyl or optionally substituted phenyl, or R^2 and R^3 together is optionally substituted alkylene of four or five carbon atoms, in each case the optional substituents on alkyl, cycloalkyl and alkylene being selected from halogen, alkoxy, alkoxycarbonyl, haloalkoxycarbonyl, alkylcarbonyl, haloalkylcarbonyl, alkylsulphonyl and haloalkysulphonyl, and the optional substituents on phenyl being selected from these substitutents and also alkyl, haloalkyl, cyano and nitro, wherein each alkyl and haloalkyl group contains from one to six carbon atoms.

6. An insecticidal/acaricidal composition comprising an effective amount of a compound of claim **1** together with at least two carriers, one of which is a surface-active agent.

4,623,659

POLYHYDROXYBENZOIC ACID DERIVATIVES

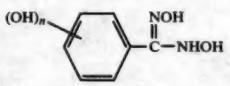
Bartholomeus van't Riet, 3419 Noble Ave., Richmond, Va. 23222; Howard L. Elford, 3313 Gloucester Rd., Richmond, Va. 23227, and Galen L. Wampler, 6938 Chamberlayne Rd., Mechanicsville, Va. 23111

Filed May 23, 1983, Ser. No. 497,370

Int. Cl.[4] A61K *31/215, 31/15, 31/155;* **C07C** *123/00, 131/00*

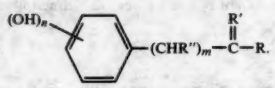
U.S. Cl. 514—508 **16 Claims**

1. A compound of the formula



in which n is 2–5 or a pharmaceutically acceptable acid addition salt thereof.

14. A method of inhibiting ribonucleotide reductase which comprises administering to a mammal carrying a tumor having a relatively high ribonucleotide reductase level, an amount of a compound according to the following formula effective to inhibit ribonucleotide reductase



wherein n is 2–5; m is 0 or 1, R'' is H or OH, R' is NOH or NH; R is NH_2 or NHOH when R' is NOH; R is NH_2 or O—C_{1-3} alkyl when R' is NH; with the proviso that, when m is 0 and R' is NOH, R cannot be NH_2; or a pharmaceutically acceptable acid addition salt thereof.

4,623,660

TRIPHENYLALKENE DERIVATIVES

Dora N. Richardson, Macclesfield, England, assignor to Imperial Chemical Industries PLC, London, England

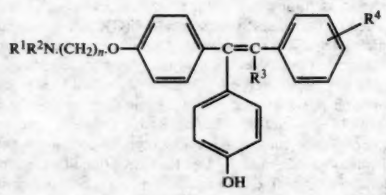
Continuation of Ser. No. 932,934, Aug. 11, 1978, abandoned. This application Dec. 3, 1979, Ser. No. 99,750

Claims priority, application United Kingdom, Aug. 22, 1977, 7725093; Jan. 27, 1978, 783364

Int. Cl.[4] A61K *31/135, 31/205*

U.S. Cl. 514—514 **7 Claims**

1. An alkene derivative of the formula:



wherein either R^1 is a hydrogen atom or a lower alkyl radical and R^2 is a lower alkyl radical, or R^1 and R^2 are joined together with the adjacent nitrogen atom to form a heterocyclic radical; R^3 is a halogen atom or a lower alkyl radical; R^4 is a halogen atom, or a hydroxy or lower alkyl radical, or is the buta-1,3-dienyl radical such that together with the benzene ring it forms a naphthyl radical; and n is 2 or a pharmaceutically-acceptable acid-addition salt thereof.

7. A method for producing an antioestrogenic effect in a warm-blooded animal in need of such an effect which comprises administering to said animal an effective amount of an alkene derivative or a pharmaceutically-acceptable acid-addition salt thereof claimed in claim 1.

4,623,661

LIPOXYGENASE INHIBITING COMPOUNDS

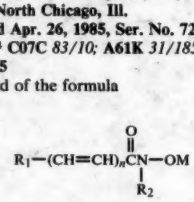
James B. Summers, Jr., Libertyville, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Apr. 26, 1985, Ser. No. 727,934

Int. Cl.[4] C07C *83/10;* **A61K** *31/185, 31/205*

U.S. Cl. 514—575 **13 Claims**

1. A compound of the formula



where

R_1 is a trinuclear aromatic or biaryl group;

R_2 is hydrogen or C_1 to C_6 alkyl or cycloalkyl; n is 1; and M is a pharmaceutically acceptable cation.

9. A method of inhibiting lipoxygenase activity in a human or lower animal host in need of such treatment, comprising administering to the human or lower animal host a compound according to claim 1 in an amount effective to inhibit lipoxygenase activity in the host.

4,623,662

ANTIATHEROSCLEROTIC UREAS AND THIOUREAS

Vern G. De Vries, Ridgewood, N.J., assignor to American Cyanamid Company, Stamford, Conn.

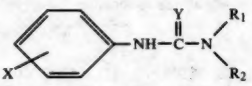
Continuation-in-part of Ser. No. 515,321, Jul. 19, 1983, abandoned, which is a continuation-in-part of Ser. No. 342,692, Jan. 26, 1982, abandoned. This application May 23, 1985, Ser. No. 737,360

The portion of the term of this patent subsequent to Jun. 7, 2000, has been disclaimed.

Int. Cl.[4] A61K *31/175;* **C07C** *127/19*

U.S. Cl. 514—596 **11 Claims**

1. A method of reducing the cholesterol ester content of an arterial wall, inhibiting atherosclerotic lesion development, and/or treating hyperlipidemia in a mammal in need of such treatment which comprises administering to said mammal an effective amount of a compound of the formula:



wherein X represents at least one substituent selected from the group consisting of (C_1–C_4)alkyl, (C_1–C_4)alkenyl, (C_1–C_4)alkynyl, phenoxy, mercapto, amino, (C_1–C_4)alkylamino, di(C_1–C_4)alkylamino, halo, trihalomethyl, (C_1–C_4)alkanoyl, benzoyl, (C_1–C_4)alkanamido, haloacetamido, nitro, cyano, carboxy, (C_1–C_4)carboalkoxy, carbamoyl, sulfamyl, methylenedioxy, phenyl, ortho-phenylene, tolyl, benzyl, halobenzyl, methylbenzyl; Y is selected from the group consisting of oxygen and sulfur; R_1 and R_2 are different and are independently selected from the group consisting of (C_4–C_{12})alkyl, (C_4–C_{12})alkenyl, (C_4–C_{12})alkynyl, C_4–C_{12}) cycloalkylalkyl, (C_7–C_{14})aralkyl, and (C_7–C_{14})aralkyl in which an aromatic ring bears at least one substituent selected from the group consisting of (C_1–C_{10})alkyl, (C_1–C_{10})alkoxy, phenoxy, benzyloxy, methylenedioxy, (C_1–C_4)alkylthio, phenyl, halo, trihalomethyl, adamantyl, (C_1–C_4)carboalkoxy and nitro.

4,623,663

NON-STEROIDAL ANTI-INFLAMMATORY COMPOUNDS AND COMPOSITIONS THEREOF

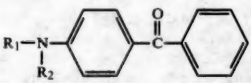
Eugene P. Pittz, Randolph, and Richard V. Smerbeck, Hackettstown, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 599,860, Apr. 13, 1984, abandoned. This application Dec. 23, 1985, Ser. No. 812,567

Int. Cl.[4] A61K *31/135*

U.S. Cl. 514—648 **7 Claims**

1. A method for the treatment of inflammation in mammals comprising topically administering to said mammals a therapeutically effective amount of the compound having the formula:



wherein R_1 and R_2 are H, or lower alkyl C_{1-8} in a pharmaceutically acceptable carrier.

4,623,664

OIL SUSPENDED PHENYLEPHRINE

Ronald D. Schoenwald, Iowa City, Iowa, and Du-Shieng Chien, Formosa, Taiwan, assignors to University of Iowa Research Foundation, Iowa City, Iowa

Filed Oct. 31, 1985, Ser. No. 793,138
Int. Cl.[4] A61K *31/135*
U.S. Cl. 514—653 **11 Claims**

1. An ocular dilating composition, comprising:

from about 0.5% by weight to about 5.0% by weight of the unionized base form of phenylephrine; and

a non-toxic pharmaceutically acceptable oil selected from the group consisting of mineral oil and edible vegetable oil, said composition providing unionized base form of phenylephrine to the eye for preferential absorption in comparison with acid and salt forms of phenylephrine.

4,623,665

METHOD OF PRODUCING ANALGESIA

Sang S. Lee, Banpo Apt. 105-502, Banpo-dong, Dongjak-ku, Seoul, Rep. of Korea

Filed Aug. 13, 1985, Ser. No. 765,248
Int. Cl.[4] A61K *31/12*
U.S. Cl. 514—678 **8 Claims**

1. A method for treating pain in a human being in need of such treatment, comprising administering to the human being a safe and effective amount of an [n]-paradol, wherein n stands for 6, 7 or 8.

4,623,666

PHARMACOLOGICAL APPLICATIONS OF DIPHENYLHALONIUM ION

Thomas P. Kennedy, 3201 N. Charles St., Baltimore, Md. 21218

Filed Nov. 6, 1984, Ser. No. 668,810
Int. Cl.[4] A61K *31/03*
U.S. Cl. 514—754 **27 Claims**

1. A method for elevating GMP content in vivo, comprising the step of administering a composition comprising a therapeutically effective amount of an active ingredient selected from the group consisting of

wherein

Ar and AR′ are phenyl which may be unsubstituted or substituted by one or more of the substituents selected from the group consisting of methyl, ethyl, butyl and t-butyl,

the administered dosage of said active ingredient being sufficient to effect elevated intracellular cGMP levels in vivo.

4,623,667

TOPICAL TREATMENT OF SKIN INFLAMMATORY DISORDERS

Eugene Gans, Westport; Sergio Nacht, Weston, and David Yeung, Stamford, all of Conn., assignors to Richardson-Vicks Inc., Wilton, Conn.

Continuation of Ser. No. 521,950, Aug. 10, 1983, abandoned. This application Jun. 28, 1985, Ser. No. 749,766
Int. Cl.[4] A61K *31/01*
U.S. Cl. 514—762 **8 Claims**

1. A method of alleviating inflammation associated with skin disorders which comprises applying topically to the afflicted situs a pharmaceutical composition comprising a therapeutically effective amount of a substantially non-polar hydrocarbon fraction derived from beeswax and a pharmaceutical carrier suitable for topical administration, said beeswax fraction consisting essentially of:

(i) more than 95 weight percent of a hydrocarbon mixture consisting essentially of about 90 percent saturated straight chain hydrocarbons and about 10 percent monounsaturated hydrocarbons, wherein the chain length of said hydrocarbons is from C_{21} to C_{33}, and

(ii) less than 5 weight percent of polar constituents in beeswax.

4,623,668

PREPARATION OF METHANOL

Franz J. Broecker, Ludwigshafen; Gerd Duembgen, Dannstadt-Schauernheim; Wolfgang Pies, Frankenthal; Gottfried Schlichthaerle, Neustadt, and Guenter Weber, Linden, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed May 25, 1984, Ser. No. 614,142
Claims priority, application Fed. Rep. of Germany, May 25, 1983, 331855
Int. Cl.[4] C07C *27/06, 31/04*
U.S. Cl. 518—709 **1 Claim**

1. A process for the preparation of methanol by catalytic conversion of a synthesis gas mixture, containing hydrogen, carbon monoxide, carbon dioxide and/or water, at from 200° to 320° C. and under from 30 to 300 bar in adiabatic and/or isothermal reactions in the presence of a catalyst containing copper and zinc, wherein the fresh catalyst is first reduced with a hydrogen-containing gas before the start-up of the process, under atmospheric or slightly superatmospheric pressure at temperatures increasing from 150° to 250° C., the reduction being contained until the formation of water from the reduction reaction substantially declines, and then the synthesis is started under conventional conditions and is continued until the formation of methanol in the reaction zone has declined substantially, after which the reaction is interrupted and the catalyst is immediately flushed with an inert gas at from 10° to 300° C. and is regenerated in situ wherein the regeneration is carried out under atmospheric or moderately superatmospheric pressure, by passing an oxygen-containing gas over the catalyst at from 150° to 200° C., the oxygen content being adapted to the particular temperature during the entire course of the regeneration, and the passage of the oxygen-containing gas continuing until the peak of the temperature profile has moved across the entire catalyst.

4,623,669

FISCHER-TROPSCH CATALYSTS

Paul F. Meier, and Filippo Pennella, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 20, 1985, Ser. No. 713,731
Int. Cl.[4] C07C *1/04*
U.S. Cl. 518—719 **12 Claims**

1. A process for producing hydrocarbons comprising contacting synthesis gas under converting conditions of temperature and pressure with a catalyst comprising a support material chosen from the group consisting of silicon dioxide, aluminum oxide, activated carbon, magnesium oxide, titania and mixtures thereof impregnated with solvated metal atoms chosen from the group consisting of iron and cobalt with a metal content of said finished catalyst ranging from an amount sufficient to be catalytically effective up to about 5 weight percent, based on the weight of said catalyst, wherein said solvated metal atoms are impregnated on said support material by vaporizing the metal in the presence of a solvent, forming a vaporous solvent/metal mixture, cooling said mixture to very low temperatures to form a cocondensed solvent/metal solid mixture, warming said solid mixture to form a metal in solvent slurry, contacting said metal in solvent slurry with said support material and removing said solvent.

4,623,670

POROUS FLUORINE RESIN MEMBRANE AND PROCESS FOR PREPARING THE SAME

Yoshihiko Mutoh, Fujisawa, and Morikazu Miura, Yokohama, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 13, 1985, Ser. No. 808,491

Claims priority, application Japan, Dec. 27, 1984, 59-273920; Apr. 9, 1985, 60-73471

Int. Cl.[4] C08J 9/26

U.S. Cl. 521—61 11 Claims

1. A process for preparing a porous fluorine resin membrane, which comprises mixing 10 to 60% by volume of a fluorine resin selected from the group consisting of an ethylene-tetrafluoroethylene copolymer, an ethylene-chlorotrifluoroethylene copolymer and polychlorotrifluoroethylene, 7 to 42% by volume of an inorganic fine powder material and 30 to 75% by volume of a chlorotrifluoroethylene oligomer, followed by melt-molding to form a molded product, removing by extraction the chlorotrifluoroethylene oligomer from said molded product, and further removing by extraction therefrom the inorganic fine powder material.

4,623,671

FOAMS OF IONICALLY ASSOCIATED BLENDS OF STYRENIC AND ETHYLENIC POLYMERS

Chung P. Park, Pickerington, Ohio, assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 653,420, Sep. 24, 1984. This application Oct. 29, 1985, Ser. No. 792,665

Int. Cl.[4] C08J 9/08

U.S. Cl. 521—92 14 Claims

1. A foam of an ionically associated blend of a styrenic polymer and an ethylenic polymer which comprises:

(a) at least about 60 weight % of an ionic sytrenic polymer; and

(b) at least about 1 weight % of an ionic ethylenic polymer; said ionic styrenic polymer being a metal or ammonium salt of a polymer having polymerized therein at least about 70 weight % of styrene or a ring alkyl-substituted styrene and about 1–30 weight % of an ethylenically unsaturated acid monomer polymerizable therewith; and said ethylenic polymer being a metal or ammonium salt of a polymer having polymerized therein at least about 60 weight % ethylene and about 1–40 weight % of an ethylenically unsaturated acid monomer polymerizable therewith.

4,623,672

ISOCYANATE ADDITION PRODUCTS AND A PROCESS FOR THEIR PRODUCTION

Roland Kleinstück, Bergisch-Gladbach, and Rolf Wiedermann, Odenthal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 5, 1985, Ser. No. 762,166

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1984, 3430285

Int. Cl.[4] C08G 18/38, 18/14

U.S. Cl. 521—108 19 Claims

1. A process for the production of a polyisocyanate addition product in which a polyisocyanate (a) is reacted with a compound (b) selected from the group consisting of 1-phosphonoethane-2-carboxylic acid-tri-C_1–C_4-alkyl esters, 1-phosphonopropane-2-carboxylic acid-tri-C_1–C_4-alkyl esters and mixtures thereof.

14. A polyisocyanate addition product which is the reaction product of a polyisocyanate (a) and a compound (b) selected from the group consisting of 1-phosphonoethane-2-carboxylic acid-tri-C_1–C_4-alkyl esters, 1-phosphonopropane-2-carboxylic acid-tri-C_1–C_4-alkyl esters and mixtures thereof.

4,623,673

URETHANE-MODIFIED POLYISOCYANURATE RIGID FOAM

David T. DeGuiseppi, Lawndale, and Gilda C. Gonzales, Carson, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 24, 1985, Ser. No. 791,030

Int. Cl.[4] C08G 18/14

U.S. Cl. 521—110 20 Claims

1. In a rigid cellular polymer in which the major recurring polymer unit is isocyanurate which polymer comprises the product obtained by reacting together an organic polyisocyanate, a trimerization catalyst, and a minor amount of a polyol in the presence of a blowing agent and a surfactant, the improvement which comprises employing as said polyisocyanate and said blowing agent,

A. a polyisocyanate combination comprising first and second polymethylene polyphenyl polyisocyanate mixtures said first mixture (a) comprising a methylenebis(-phenylisocyanate) content of from about 20 to about 85 percent by weight with the remainder comprising polymethylene polyphenyl polyisocyanates of functionality greater than 2.0 and wherein said MDI has a 4,4′-isomer content of at least about 95 percent; and said second mixture (b) comprising an MDI content of from about 50 to about 75 percent by weight with the remainder comprising polymethylene polyphenyl polyisocyanates of functionality greater than 2.0 and wherein the 2,4′-isomer content of said MDI is at least about 10 percent with the balance comprising the 4,4′-isomer, said (a) and said (b) being present in such proportions by weight to provide said cellular polymer substantially free of internal cracks; and

B. an inert volatile organic blowing agent having a boiling point of from about 30° to about 90° C.

4,623,674

POLYMER/POLYOLS OF SUBSTITUTED STYRENES AND POLYURETHANES MADE THEREFROM

Frederick E. Bailey, Jr., Charleston, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 21, 1985, Ser. No. 747,187

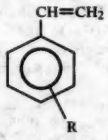
Int. Cl.[4] C08G 18/14

U.S. Cl. 521—137 21 Claims

1. A polymer/polyol dispersion which is useful in the preparation of polyurethanes comprising:

(a) a polyol having a hydroxy number from about 20 to about 250; and

(b) a polymer containing a substituted styrene monomer of the general formula



where R is not in the ortho position and is an alkyl group containing one to four carbon atoms and may be substituted or unsubstituted, wherein the total amount of polymer dispersed in the polyol is from about 5 to 55 weight percent, based on the total weight of the dispersion with the proviso that the polymer contain less than 20 weight percent, based on the total weight of the polymer, of acrylonitrile when comonomers are employed.

4,623,675

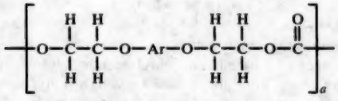
AROMATIC POLY(ETHER-CARBONATE) CONTAINING ETHYLENEOXY AND ARYLENE OXY MOIETIES

William R. Darnell, and Winston J. Jackson, Jr., both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

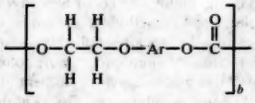
Filed Jul. 31, 1985, Ser. No. 760,801
Int. Cl.[4] C08G 63/62
U.S. Cl. 521—180 4 Claims

1. A composition of matter comprising a mixture of the following repeating units:

(1)

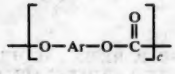


(2)



and

(3)



wherein a, b, and c are each integers of a magnitude such as to result in an inherent viscosity of about 0.05–2.00 of said composition determined at 25° C. in a 40/36/24 percent by weight mixture of p-chlorophenol/phenol/1,1,2,2-tetrachloroethane at a concentration of 0.1 g/100 mL, and Ar is aryl having 6–30 carbon atoms.

4,623,676

PROTECTIVE COATING FOR PHOTOTOOLS

John F. Kistner, Oakdale, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 18, 1985, Ser. No. 692,780
Int. Cl.[4] G03C 1/68; C08F 8/00, 2/46, 30/08
U.S. Cl. 522—15 13 Claims

2. A radiation-curable composition comprising:

(a) at least one polymerizable non-silane-containing acrylic compound,

(b) at least one polymerizable epoxy-functional silane compound,

(c) a free-radical photoinitiator capable of initiating polymerization of said acrylic compound, and

(d) optionally, a cationic photoinitiator capable of initiating polymerization of said epoxy-functional silane compound,

said composition being solvent-free or containing only ester or ketone solvent and said composition containing epoxy functionality only in a silane compound.

4,623,677

SUMMER BLEND CAULKING COMPOSITION

Norman Nevins, and Thomas L. Gustafson, both of Dayton, Ohio, assignors to Magic Seal Corporation, Dayton, Ohio

Filed Aug. 8, 1985, Ser. No. 763,512
The portion of the term of this patent subsequent to Feb. 18, 2003, has been disclaimed.
Int. Cl.[4] C08L 23/08; C08K 5/34, 3/36
U.S. Cl. 523—122 17 Claims

1. A solvent-based, clear caulking composition adapted to be applied at temperatures between about 60° to about 100° F. consisting essentially of by weight approximately:

50–60% solvent,

13–45% ethylene vinyl acetate copolymer having a 40–52% vinyl acetate content,

8–16% water white hydrocarbon resin,

4–6% thickening agent,

0–2.4% plasticizer,

0–2.5% bactericide, and

0–0.25% antioxidant/U.V. light stabilizer.

4,623,678

METHOD FOR SHEAR COAGULATION OF LATEX RESINS

Eugene R. Moore, Midland, and Norman A. Lefevre, Bay City, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 26, 1985, Ser. No. 727,970
Int. Cl.[4] C08J 3/02, 3/16
U.S. Cl. 523—335 24 Claims

1. A process for shear coagulating a latex resin to form a paste-like product, comprising the steps of:

(A) providing a latex stabilized with a pH sensitive emulsifier mixture and having a pH above 7.5;

(B) destabilizing said latex by contacting said latex with gaseous carbon dioxide; and

(C) subjecting said latex to high shear in an amount sufficient to coagulate said latex.

4,623,679

PREPARATION OF A BINDER SUITABLE FOR COATING AGENTS

Juergen Gimpel, Ludwigshafen; Erich Gulbins, Heidelberg, and Gregor Ley, Wattenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jun. 13, 1985, Ser. No. 744,224
Claims priority, application Fed. Rep. of Germany, Jun. 15, 1984, 3422216
Int. Cl.[4] C08L 63/00, 61/04
U.S. Cl. 523—410 7 Claims

7. The process of claim 1, wherein some of the aldehyde component is replaced by ketone(s).

4,623,680

AQUEOUS EPOXY RESIN DISPERSIONS FOR CAN COATING USE

Farah D. Azarnia, and Jimmy D. Elmore, both of Louisville, Ky., assignors to Celanese Corporation, New York, N.Y.

Filed Jun. 3, 1985, Ser. No. 740,351
Int. Cl.[4] C09D 3/56, 3/58, 3/81
U.S. Cl. 523—412 13 Claims

1. A coating composition which comprises an aqueous dispersion of a resinous blend salted with ammonia or an amine wherein the resinous blend, before salting, consists essentially of

(a) about 15 to about 30 weight percent of a carboxyl functional acrylic copolymer;

(b) about 10 to about 25 weight percent of a phenolplast resin;

(c) about 40 to about 75 weight percent of a partially defunctionalized polyepoxide resin; and

(d) about 0 to about 5 weight percent of an epoxidized hydrocarbon or vegetable oil,

wherein (a) has an average molecular weight of about 3,000 to about 30,000 and an acid value of about 100 to about 300, and wherein (c) is a diglycidyl ether of a dihydric phenol having an epoxide equivalent weight of about 750 to about 3,000 before defunctionalization having been reacted with about 0.02 to about 0.2 of equivalents per epoxide equivalent of a non-polymerizable monofunctional organic acid having a pKa of about 2.0 to about 5.

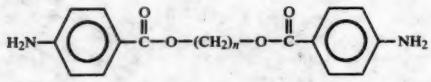
4,623,681

CURABLE EPOXY RESIN COMPOSITIONS

Kevin Hirschbuehler, Bel Air, Md., and Dalip K. Kohli, Norwalk, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Aug. 1, 1983, Ser. No. 518,874
Int. Cl.[4] C08K *3/04*
U.S. Cl. 523—468 7 Claims

1. A fiber resin matrix composition comprised of:
(a) non-siliceous reinforcing filaments, and
(b) a heat-curable epoxy resin composition comprising:
(i) an epoxy prepolymer or combination of prepolymers having more than one epoxide group per molecule, and
(ii) an amount effective to promote cure of an amine functional curing agent or combination of curing agents selected from esters of the formula:



wherein n is an integer of from 2 to 12, the amine-functional curing agent (b) (ii) being present in greater stoichiometric amounts than the epoxy prepolymer (b) (i).

4,623,682

CEMENT MIXES AND ADMIXTURES THEREOF

Richard R. Nicholson, Lyndhurst, and Arthur H. Gerber, Solon, both of Ohio, assignors to Sandoz Ltd., Basel, Switzerland

Filed Oct. 1, 1985, Ser. No. 782,682
Int. Cl.[4] C04B *24/18, 24/22*
U.S. Cl. 524—3 13 Claims

1. In a water-reduced cement mix comprising hydraulic cement, aggregate, water and high range water-reducing agent; the improvement comprising employing therein as high range water-reducing agent an admixture combination of a sulfonated naphthalene-formaldehyde condensate and fractionated sulfonated lignin in combined amounts sufficient to maintain the mix workable, as indicated by exhibiting more than 60% of its original slump, for a time period greater than the time the rate of hardening is prolonged by such admixture combination.

4,623,683

FABRIC FINISH WITH ALPHA OLEFIN RESINS AND PROCESS

John G. Villarreal; Calvin J. Verbrugge, and Fred J. Reichley, all of Racine County, Wis., assignors to S.C. Johnson & Son, Inc., Racine, Wis.

Filed Oct. 12, 1984, Ser. No. 659,979
Int. Cl.[4] C08J *00/00*
U.S. Cl. 524—47 7 Claims

1. An aqueous fabric finishing composition comprising a solublized polymer of from (a) 40 to 51 mole percent of at least one higher 1-alkene having a carbon content of C_{10} to C_{18} and C_{20} to C_{30+} and from (b) about 60 to 49 mole percent maleic anhydride, said composition being adapted to be applied to fabrics and affixed thereto under heat and pressure, and (c) an additive to reduce friction of said composition after application to fabrics and to reduce the foaming tendency of said composition on application to fabrics.

4,623,684

HYDROCARBYL SUBSTITUTED CARBOXYLIC ACYLATING AGENT DERIVATIVE CONTAINING COMBINATIONS, AND FUELS CONTAINING SAME

Casper J. Dorer, Jr., Lyndhurst, and Katsumi Hayashi, Mentor, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Continuation of Ser. No. 711,114, Mar. 12, 1985, Pat. No. 4,575,526, which is a division of Ser. No. 404,845, Aug. 9, 1982, Pat. No. 4,564,460. This application Oct. 16, 1985, Ser. No. 788,183
The portion of the term of this patent subsequent to Mar. 11, 2003, has been disclaimed.
Int. Cl.[4] C08K *5/35*
U.S. Cl. 524—96 3 Claims

1. A composition comprising:
a copolymer of ethylene and vinyl acetate, said copolymer having about 30 to about 40% by weight vinyl acetate, a number average molecular weight in the range of about 1500 to about 3000, and about 3 to about 6 methyl terminating side branches per 100 methylene groups; and
the reaction product of a hydrocarbyl-substituted succinic anhydride with a mixture of aminopropylmorpholine and diethylenetriamine, the hydrocarbyl substituent of said succinic anhydride being a polymer of C_{15-18} alpha-olefins, the number average molecular weight of said substituent being in the range of about 2000 to about 8000.

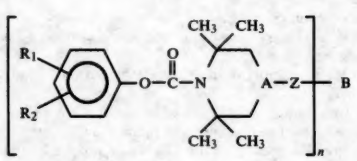
4,623,685

THERMOSETTING SYNTHETIC RESIN LACQUER COMPOSITIONS OF IMPROVED LIGHT STABILITY

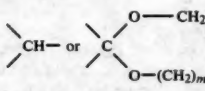
Motonobu Minagawa, Koshigaya; Yutaka Nakahara, Okegawa; Toshihiro Shibata, Omiya, and Ryozo Arata, Kyoto, all of Japan, assignors to Adeka Argus Chemical Co., Ltd., Saitama, Japan

Filed Mar. 21, 1985, Ser. No. 714,236
Claims priority, application Japan, Mar. 21, 1984, 59-54068
Int. Cl.[4] C08K *5/34*
U.S. Cl. 524—99 25 Claims

1. A thermosetting synthetic resin lacquer composition having an improved resistance to deterioration when exposed to ultraviolet light, comprising a 1-phenoxycarbonyl-2,2,6,6-tetramethyl piperidine compound which does not form salts with acid catalysts and having the formula:



wherein:
A is



Z is selected from the group consisting of a direct linkage; —O—; and —N(R_4);
n is a number from 1 to 6;
B is selected from hydrogen, hydrocarbyl, residues of organic carboxylic acids having from two to about twenty carbon atoms, from one to about six carboxylic acid groups, and optionally from one to two nitrogen and sulfur atoms; isocyanuric acid; and inorganic oxyacids;

R_1, R_2, R_3 and R_4 are selected from hydrogen and alkyl having from one to about eighteen carbon atoms;
m is 0 or 1; and
p is 0 to 20.

4,623,686

STORAGE STABLE COMPOSITIONS BASED ON POLYVINYL CHLORIDE PLASTISOLS AND STABILIZED ISOCYANATES

Helmut Hürnik; Gerhard Grögler; Heinrich Hess, all of Leverkusen, and Richard Kopp, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 24, 1985, Ser. No. 694,562

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1984, 3403497

Int. Cl.[4] C08K 5/34

U.S. Cl. 524—101 10 Claims

1. A composition which is stable in storage and which is heat curable at a temperature of from 100° C. to 200° C. comprising:
(A) a polyvinyl chloride plastisol,
(B) a surface modified, finely divided, stabilized polyisocyanate having retarded reactivity prepared by deactivating from 0.1 to 25 equivalent percent of the isocyanate groups of a finely divided, solid polyisocyanate having a melting point above 40° C. with a member selected from the group consisting of
(i) aliphatic or cycloaliphatic di- and polyamines,
(ii) hydrazine, alkylhydrazines, N,N'-dialkylhydrazines, and di- and polyhydrazide compounds, and
(iii) acyclic, monocyclic or bicyclic amidines and guanidines, and
(C) a member selected from the group consisting of
(i) plasticizers for polyvinyl chloride,
(ii) lightly branched, relatively high molecular weight polyhydroxyl compounds which are compatible with component (A) and which have hydroxyl functionalities of from 2 to about 4 and hydroxyl numbers of from about 15 to 150, and
(iii) mixtures thereof.

4,623,687

BICYCLIC PHOSPHINE OXIDES AND THEIR USE AS FLAME RETARDANTS IN STYRENE MODIFIED POLYPHENYLENE ETHER RESINS

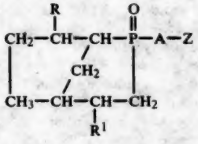
Joseph Green, East Brunswick, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Mar. 1, 1985, Ser. No. 707,303

Int. Cl.[4] C08K 5/53; C07D 105/02

U.S. Cl. 524—116 8 Claims

1. A bicyclic phosphine oxide composition comprising the grouping



wherein R and R^1 are the same and both are selected from hydrogen or methyl, P is phosphorus, O is oxygen, A is an alkylene chain of 2 to 12 carbon atoms and Z is a polar group.

4,623,688

REMOISTENABLE HOT MELT ADHESIVES

Thomas P. Flanagan, Green Brook, N.J., assignor to National Starch and Chemical Corporation, Bridgewater, N.J.

Continuation-in-part of Ser. No. 759,397, Jul. 26, 1985, abandoned. This application Dec. 12, 1985, Ser. No. 808,596

Int. Cl.[4] C08K 5/06; C08L 71/00

U.S. Cl. 524—377 10 Claims

1. A remoistenable non-volatile hot melt adhesive composition comprising a blend of:
(a) 25 to 60% by weight of a poly(alkyloxazoline);
(b) 20 to 75% by weight diluent;
(c) 0 to 40% by weight tackifier;
(d) 0 to 25% by weight plasticizer;
(e) 0 to 4% by weight stabilizer; and
(f) 0 to 5% by weight non-block additives;
where the total of components c through f comprises a maximum of 40% by weight of the total composition.

4,623,689

AQUEOUS COLORED POLYMER, PROCESS FOR PREPARING SAME AND INK COMPRISING SAME

Takashi Shintani; Noriaki Emura, both of Tokuyama; Tetsuo Tanaka, Hofu, and Yasuhiro Oda, Tokuyama, all of Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shinnanyo, Japan

Filed Jun. 27, 1984, Ser. No. 625,254

Claims priority, application Japan, Jun. 29, 1983, 58-116063; Jul. 1, 1983, 58-118121; Jul. 12, 1983, 58-125463; Aug. 11, 1983, 58-145744; Aug. 12, 1983, 58-146470; Oct. 31, 1983, 58-202675; Mar. 26, 1984, 59-56281

Int. Cl.[4] C08L 41/00

U.S. Cl. 524—457 11 Claims

1. An aqueous composition of a colored polymer which comprises (a) a homopolymer of an ethylenically unsaturated sulfonic acid or its salt or (b) a copolymer of an ethylenically unsaturated sulfonic acid or its salt with other ethylenically unsaturated monomer, said homopolymer or copolymer being dyed with a basic dye and having a film-forming temperature of not higher than 35° C.

4,623,690

CATHODICALLY PRECIPITABLE AQUEOUS ELECTRO-DIPCOATING AGENT

Hans-Peter Patzschke; Armin Göbel, both of Wuppertal, and Reiner Böhmert, Haan, all of Fed. Rep. of Germany, assignors to Herberts Gesellschaft mit beschraenkter Haftung, Wuppertal, Fed. Rep. of Germany

Filed Sep. 11, 1984, Ser. No. 649,413

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1983, 3333834

Int. Cl.[4] C08L 51/00, 77/00

U.S. Cl. 524—538 14 Claims

1. A cathodically aqueous electro-dipcoating agent which can be rendered water-soluble by protonation with acids, and which comprises: as Component A,
50 to 99% by weight (relative to the total quantity of Components A and B) of a synthetic resin binder having urea or urethane groups, tertiary amino groups and hydroxyl groups, and which
(a) has an amine number of 35 to 120
(b) has a hydroxyl number of 50 to 400
(c) has substantially no primary, secondary and quaternary amino groups,
(d) has substantially no free isocyanate groups;
(e) has substantially no blocked isocyanate groups which can react at baking temperatures of up to 200° C. with hydroxyl groups present in the components; and
(f) a median molecular weight from 500 to 20,000;
as Component B,
1 to 50% by weight (relative to the total quantity of Components A and B) of substantially non-acid synthetic resins

having an acid number below 20, an average molecular weight of about 350 to 5000, and at least two terminal esterified carboxyl groups which can react under normal lacquer baking conditions with Component A, accompanied by cross-linkage; and

as Component C,

a catalytically effective amount of an ester interchanging catalyst for the thermal ester interchange of Component A with Component B at a temperature of more than 140° C.

4,623,691

MOULDING MATERIALS

David Taylor, Halesowen, and Janet P. Griffiths, Warley, both of England, assignors to BIP Chemicals Limited, Manchester, England

Filed May 1, 1985, Ser. No. 729,353

Claims priority, application United Kingdom, May 3, 1984, 8411432

Int. Cl.[4] C08G *12/34*

U.S. Cl. 524—542 **15 Claims**

1. A method for the manufacture of an amino-formaldehyde moulding composition comprising curable amino formaldehyde resin and filler in which the resin and filler are compounded together under such conditions as to leave the resin in a state in which it will flow and cure under heat and pressure and wherein the components of the composition which are compounded together comprise:

(a) an aqueous amino-formaldehyde resin solution which is used in an amount such as to provide curable amino-formaldehyde resin to make up 0 to 90 percent by weight of the resin component of moulding composition,

(b) at least one filler in an amount such as to make up 20 to 60 percent by weight of the moulding composition and

(c) a urea-formaldehyde resin which is solid at room temperature and which has a degree of condensation in the range of from about 25 to about 45 percent and a softening point in the range 50° C. to 90° C. and/or which is a product of reaction of at least, urea, formaldehyde and a modifier selected from the group consisting of organic amides, amino-triazines, reactive organic hydroxyl compounds and reaction products of these compounds with formaldehyde, the solid resin making up 4 to 80 percent by weight of the moulding composition.

4,623,692

PROCESS FOR PREPARING AN AQUEOUS CUT OF A LIGAND-FREE MONOMER/MALEIC ANHYDRIDE POLYMER AND PRODUCT

Frederick C. Hansen, Racine County, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Mar. 14, 1985, Ser. No. 711,895

Int. Cl.[4] C08L *37/00*

U.S. Cl. 524—549 **5 Claims**

1. A process for preparing an aqueous resin cut comprising solubilizing an alpha olefin/styrene/maleic anhydride polymer with a zinc or zirconium fugitive ligand complex in an aqueous medium.

4,623,693

ROOM TEMPERATURE-CURABLE ORGANOPOLYSILOXANE COMPOSITION

Yoshio Inoue; Takehide Okami; Koji Yokoo, and Hitoshi Kinami, all of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Aug. 5, 1985, Ser. No. 762,555

Claims priority, application Japan, Aug. 7, 1984, 59-165467

Int. Cl.[4] C08K *3/02*

U.S. Cl. 524—700 **4 Claims**

1. A room temperature-curable organopolysiloxane composition which comprises:

(a) 100 parts by weight of a diorganopolysiloxane terminated at both molecular chain ends each with a silanolic hydroxy group;

(b) from 1 to 25 parts by weight of an acyloxysilane compound represented by the general formula

$$R^1_aSi(OCOR^2)_{4-a},$$

in which R^1 is a substituted or unsubstituted monovalent hydrocarbon group, R^2 is a substituted or unsubstituted monovalent hydrocarbon group having 1 to 30 carbon atoms and the suffix a is zero or 1, or a partial hydrolysis-condensation product thereof;

(c) from 0.01 to 10 parts by weight of an organotin compound;

(d) from 0.2 to 10 parts by weight of an organic silicon compound represented by the general formula

$$(R^3O)_b(MeCOO)_{3-b}Si—O—R^4—O—Si(OCOMe)_{3-b}(OR^3)_b,$$

in which Me is a methyl group, R^3 is a substituted or unsubstituted monovalent hydrocarbon group, R^4 is a divalent hydrocarbon group or a polyoxyalkylene group of the formula $—C_xH_{2x}—O)_nC_xH_{2x}—$, x being a positive integer of 2, 3 or 4 and n being a positive integer not exceeding 1000, and b is 1 or 2; and

(e) from 5 to 300 parts by weight of a filler.

4,623,694

CURABLE ORGANOSILOXANE COMPOSITIONS CONTAINING AN EMULSIFIED EPOXIDE COMPOUND AND ELASTOMERIC MATERIALS PREPARED THEREFROM

Joseph W. Keil, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Nov. 18, 1985, Ser. No. 804,220

Int. Cl.[4] C08K *5/24*

U.S. Cl. 524—731 **10 Claims**

1. A curable composition consisting essentially of an oil-in-oil emulsion comprising

I. a continuous phase comprising from 25 to 95 percent, based on the weight of said composition, of a liquid, carboxyalkyl terminated polydiorganosiloxane containing an average of from 100 to 750 diorganosiloxane units per molecule, wherein at least 90 mole percent of said units are dimethylsiloxane, any remaining units being of the general formula R_2SiO, and terminal units of the general formula HOOCR'—, where each R is individually selected from the group consisting of alkyl containing from 2 to 12 carbon atoms, haloalkyl containing from 1 to 3 carbon atoms and phenyl and R' represents an alkylene radical containing from 1 to 20 carbon atoms;

II. a dispersed phase comprising from 2.5 to 70 percent, based on the weight of said composition, of a liquified epoxide compound selected from the group consisting of diglycidyl ethers of di-and bis-phenols;

III. an amount sufficient to stabilize said emulsion of a solubilized dispersing agent consisting essentially of a polyorganosiloxane selected from the group consisting of (1) organosiloxane copolymers obtained by reacting (a) from 60 to 95 percent by weight of a first copolymer consisting essentially of from 45 to 72 mole percent SiO_2 units and from 28 to 55 mole percent of $(CH_3)_3SiO_{\frac{1}{2}}$ units, and (b) from 5 to 40 percent by weight of a second copolymer consisting essentially of identical or different units of the formula R'' $SiO_{3/2}$, where R'' is selected from the group consisting of alkyl containing from 1 to 4 carbon atoms and phenyl, and (2) block copolymers comprising at least one segment consisting essentially of diorganosiloxane units of the general formula R'''_2SiO where R''' represents methyl, ethyl or vinyl and at least 95 percent of the diorganosiloxane units are polydimethylsiloxane, and at least one segment consisting essentially of one or more units of the general formula R'''' YSiO or Z, where R'''' is selected

from the same group as R''', Y represents a monovalent polyoxyalkylene radical, Z represents a divalent polyoxyalkylene radical, Y and Z are bonded to the block copolymer by means of silicon-to-carbon or silicon-to-oxygen bonds, exhibit a molecular weight of at least 1000, and consist essentially of from 50 to 100 mole percent of polyoxyethylene units, the remaining 0 to 50 mole percent being polyoxypropylene units, and the molar ratio of diorganosiloxane units to R'''' YSiO or Z units is from 400 to 800; and

IV. an amount of a liquid or solubilized catalyst sufficient to promote curing of said composition.

4,623,695

ACRYLATE HYDROSOLS

Rainer Hoefer, Duesseldorf; Karl-Heinz Schmid, Mettmann, and Karl-Heinz Ackermann, Duesseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Jan. 22, 1985, Ser. No. 693,935

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1984, 3402447

Int. Cl.[4] C08K *5/41*

U.S. Cl. 524—747 **11 Claims**

1. In a process for the preparation of an acrylate hydrosol by the polymerization of

(a) from about 30 to about 99% by weight of at least one (meth)acrylic acid ester of a C_{1-8} alcohol,

(b) from about 0.5 to about 7% by weight of at least one ethylenically unsaturated acid or amide thereof, and

(c) from 0 to about 70% by weight of at least one monomer selected from the group consisting of styrene, methyl styrene, acrylonitrile, vinyl acetate, and vinyl chloride

in aqueous emulsion, the improvement comprising carrying out the polymerization in the presence of an effective quantity of an emulsifier mixture of (i) at least one alkyl phenol ether sulfate and (ii) at least one of an α-sulfocarboxylic acid, a C_{1-4} ester thereof, or a salt of either of the foregoing, wherein the caroboxylic acid portion thereof contains from 8 to 24 carbon atoms.

4,623,696

DICYCLOPENTADIENE-TRIS(2-HYDROXYETHYL-)ISOCYANURATE-MODIFIED POLYESTERS

David W. Mabrey, Belleair, Fla., and James M. Dye, St. Charles, Mo., assignors to The P. D. George Company, St. Louis, Mo.

Filed May 2, 1985, Ser. No. 729,653

Int. Cl.[4] C08G *63/46*

U.S. Cl. 525—33 **14 Claims**

1. A dicyclopentadiene and tris(2-hydroxyethyl)isocyanurate modified unsaturated polyester.

4,623,697

UNGELLED RESINS CONTAINING HYDROLYZABLE MOIETIES FROM ORGANOSILANE COMPOUNDS

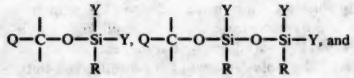
Wen-Hsuan Chang, and David T. McKeough, both of Gibsonia, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 30, 1985, Ser. No. 728,966

Int. Cl.[4] C08F *8/00*

U.S. Cl. 525—61 **28 Claims**

1. An ungelled resin composition comprising a compound having at least one group containing a silicon atom said group selected from:



-continued

wherein

Q represents the residue from an organic polyol selected from the group consisting of (1) simple diols, triols and higher hydric alcohols, (2) polyester polyols, (3) polyether polyols, (4) amide containing polyols, (5) epoxy polyols and (6) polyhydric polyvinyl alcohols, and each

R independently is selected from the group of moieties consisting of hydrogen, and a C_1–C_{10} group joined to Si through an Si—C linkage, and

Y represents an easily hydrolyzable group;

provided that said ungelled resin composition contains an amount of easily hydrolyzable Y moieties directly bonded to silicon atoms such that the ratio of the number of grams of said ungelled resin composition to equivalents of easily hydrolyzable Y moieties in said ungelled resin composition is in a range of from 40 to 667.

4,623,698

TACKIFIERS AND THEIR USE IN PRESSURE SENSITIVE ADHESIVES

Lutz E. Jacob, Wezembeek-Oppem, Belgium; André Lepert, Allouville Bellefosse, France, and Morris L. Evans, Baton Rouge, La., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Mar. 28, 1985, Ser. No. 717,980

Claims priority, application United Kingdom, Mar. 28, 1984, 8407984

Int. Cl.[4] C08L *33/02*

U.S. Cl. 525—221 **4 Claims**

1. A pressure sensitive adhesive comprising from 30% to 85% by weight of a carboxylated styrene butadiene copolymer and from 15% to 70% by weight of a resin having a softening point from 10° C. to 80° C. being a copolymer of a feed which is predominently C_5 olefines and diolefines and one or more monovinyl aromatic compounds said resin containing from 10 to 30 wt. % of the monovinyl aromatic compound.

4,623,699

PREPARATION OF LINEAR, BASIC POLYMER POWDERS

Fritz Brunnmueller, Limburgerhof; Michael Kröner, Mannheim; Heinrich Hartmann, Limburgerhof; Friedrich Linhart, Heidelberg, and Klaus Pfitzner, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Rheinland-Pfalz, Fed. Rep. of Germany

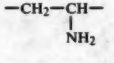
Filed Nov. 25, 1985, Ser. No. 802,060

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1984, 3443461

Int. Cl.[4] C08F *8/00*

U.S. Cl. 525—355 **10 Claims**

1. A process for the preparation of a linear, basic polymer powder which contains units of the formula



(I)

and has a Fikentscher K value of from 10 to 250 (measured at a polymer concentration of 0.5% by weight in 5% strength aqueous sodium chloride solution at 25° C., wherein the formyl groups are eliminated from an N-vinylformamide polymer powder which contains no more than 5% by weight of water by reaction with a gaseous hydrogen halide at up to 200° C., with formation of units of the formula I.

4,623,700

CURABLE ORGANOPOLYSILOXANE COMPOSITION USEFUL FOR COATING OPTICAL FIBERS

Frank J. Traver, Troy; Simon M. John, Ballston Lake, and Duane F. Merrill, Ballston Spa, all of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Jun. 7, 1985, Ser. No. 742,253

Int. Cl.[4] C08L *83/05, 83/06, 83/07*

U.S. Cl. 525—478 **18 Claims**

1. A curable composition, comprising:

(a) 100 parts by weight of a substantially linear olefinic group-containing polydiorganosiloxane;

(b) from about 50 to about 400 parts by weight of a resinous olefinic group-containing polysiloxane per 100 parts by weight of component (a);

(c) from about 0.5 to about 25 percent by weight based on the weight of components (a) and (b) of an organic monomer capable of reacting with the hydrogen atoms of component (d);

(d) an organohydrogenpolysiloxane crosslinking agent in an amount sufficient to provide from about 0.8 to about 3 silicon-bonded hydrogen atoms per alkenyl radical in components (a), (b) and (c); and

(e) an effective amount of precious metal or precious metal containing hydrosilation catalyst.

4,623,701

MULTIFUNCTIONAL EPOXY RESINS

John L. Massingill, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

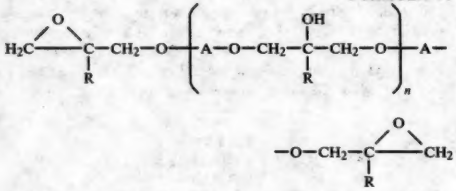
Filed Jul. 10, 1985, Ser. No. 753,482

Int. Cl.[4] C08G *59/14, 59/04*

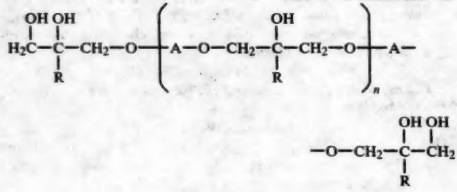
U.S. Cl. 525—523 **55 Claims**

1. A multifunctional epoxy resin obtained by dehydrohalogenating the reaction product of (A) an epihalohydrin with (B) at least one material selected from those materials represented by the following formulas VI–IX

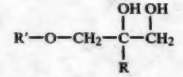
FORMULA VI



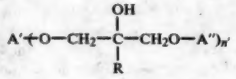
FORMULA VII



FORMULA VIII



FORMULA IX



wherein each A is independently the residue which would remain if the hydroxyl groups of a material having two hydroxyl groups were removed; A′ is the residue which would result if the hydroxyl groups of a material having from 2 to about 10 aromatic hydroxyl groups were removed; A″ is a monovalent hydrocarbyl group having from 1 to about 20 carbon atoms; each R is independently hydrogen or an alkyl group having from 1 to about 4 carbon atoms; R^1 is an aliphatic or aromatic or alkyl or halogen substituted aliphatic or aromatic hydrocarbon group; n has an average value of from about 0.5 to about 150 and n′ has a value from 2 to about 10.

4,623,702

TWO-COMPONENT ADHESIVE OR SEALING COMPOSITION

Richard Grieves, Hillbrow, and Kimleigh G. M. Pratley, Krugersdorp, both of South Africa, assignors to Pratley Investments Limited, Transvaal, South Africa

Filed Dec. 10, 1984, Ser. No. 679,752

Claims priority, application South Africa, Mar. 19, 1984, 84/2012

Int. Cl.[4] C08L *63/02*

U.S. Cl. 525—528 **14 Claims**

1. A composition comprising two components as a mixture comprises: a first component comprising a mixture of a constituent (a) being an amine curable epoxy resin, and a constituent (b) being an isocyanate pre-polymer with ether and blocked urethane groups, wherein the amount of constituent (a) comprises from 29 to 52 percent by weight of constituents (a) and (b), and the amount of constituent (b) comprises from 48 to 71 percent by weight of the total weight of constituents (a) and (b), and a second component comprising a mixture of constituent (c) being a suitable amine hardener, constituent (d) being a tertiary amine as a primary accelerator, and constituent (e) being a mercaptan terminated polymer as secondary accelerator, wherein the amount of constituent (c) comprises from 0.3 to 47 percent by weight of the total weight of constituent (a) and (b), the amount of constituent (d) comprises from 1 to 27 percent by weight of the total weight of constituents (a) and (b), and the amount of constituent (e) comprises from 63 to 293 percent by weight of the total weight of constituents (c) and (d), the first component and the second component being blendable together to form an adhesive or sealing composition.

4,623,703

SYNTHESIS OF CONDUCTING POLYMERS: POLYBUTADIENES FROM DISUBSTITUTED BUTYNES

Budalur S. Thyagarajan, San Antonio, Tex., assignor to The University of Texas System, Austin, Tex.

Filed Oct. 24, 1984, Ser. No. 664,342

Int. Cl.[4] C08F *38/00*

U.S. Cl. 525—535 **1 Claim**

1. A method for chemically synthesizing poly-1-S-aryl-(1′,4′)-disulfonyl-1,3-butadiene from 1,4-dichloro-2-butyne comprising the steps of:

(a) reacting 1,4-dichloro-2-butyne with 1,4-benzenethiol to yield poly-1-S-aryl-(1′,4′)-dimercapto-2-butyne;

(b) oxidizing sulfide groups in the 1-S-aryl-(1′,4′)-dimercapto-2-butyne polymer to corresponding sulfonyls to yield poly-1-S-aryl-(1′,4′)-disulfonyl-2-butyne; and

(c) isomerizing the poly-1-S-aryl-(1′,4′)-disulfonyl-2-butyne to yield the poly-1-S-aryl-(1′,4′)-disulfonyl-1,3-butadiene.

4,623,704

USE OF MEMBRANES FOR ETHYLENE RECOVERY IN POLYMERIZATION PROCESSES

Dennis R. Dembicki, Fort Saskatchewan, Canada; Frederick L. Coan, Pittsburg, Calif.; Craig L. Glassford, Sarnia, Canada, and Dana C. Overman, Pleasant Hill, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 8, 1985, Ser. No. 796,384
Int. Cl.[4] C08F *6/10*
U.S. Cl. 526—68 16 Claims

1. An improved process for manufacture of ethylene polymers wherein the improvement comprises:

(a) contacting at least part of the gas mixture remaining after polymerization containing unconverted ethylene monomer with a normally solid, semi-permeable, asymmetric, water-dry, cellulose triacetate hollow fiber membrane at conditions which promote selective permeation of ethylene through the membrane; and

(b) recycling the ethylene-enriched permeate as feed for the ethylene polymerization.

4,623,705

PROCESS FOR SYNTHESIZING ALLYL CARBONATES BY POLYHYDRIC ALCOHOLS AND THEIR DERIVATIVES

Ugo Romano, Vimercate, and Giuseppe Iori, San Donato Milanese, both of Italy, assignors to Anic S.p.A., Palermo, Italy

Division of Ser. No. 374,331, May 3, 1982, Pat. No. 4,508,656, which is a continuation of Ser. No. 240,119, Mar. 3, 1981, abandoned. This application Jan. 24, 1985, Ser. No. 694,266
Claims priority, application Italy, Mar. 5, 1980, 20351 A/80
Int. Cl.[4] C08F *18/24, 118/24, 218/24, 2/00*
U.S. Cl. 526—75 12 Claims

1. A process for preparing polymers suitable for use as optical glass substitutes comprising (1) reacting diallyl carbonate with a polyhydric alcohol in the presence of a basic catalyst to obtain a mixture of monomers and oligomers of allyl carbonates of polyhydric alcohols of the following formula:

$$CH_2=CH-CH_2-OCO(ROCO)_nCH_2-CH=CH_2$$
$$\quad\quad\quad

4,623,708

PREPOLYMERIZATION OF MONOMER COMPOSITIONS CONTAINING DIETHYLENE GLYCOL BIS(ALLYL CARBONATE)

Robert I. Ezrielev, Edison; Melvin E. Kamen, Woodcliff Right, both of N.J., and Donald H. Petcen, Colonial Heights, Va., assignors to Coburn Optical Industries, Inc., Tulsa, Okla.

Filed Mar. 1, 1985, Ser. No. 707,049
Int. Cl.[4] C08F *118/00*
U.S. Cl. 526—314 42 Claims

1. A process for the production of ophthalmic lenses, which comprises:

prepolymerizing a composition containing diethylene glycol bis(allyl carbonate) and up to 40% by weight of a vinyl ester by adding an effective amount of at least one first free radical type initiator and heating to a temperature above the one hour half-lifetime temperature of the initiator to form a prepolymer syrup;

adding an effective amount of at least one second free radical type initiator, which may be the same or different from the first initiator, to the prepolymer syrup to form a molding compound;

charging the molding compound to a mold; and

curing the molding compound in the mold to polymerize the composition.

4,623,709

ADHESIVES BASED ON POLYURETHANE PREPOLYMERS HAVING A LOW RESIDUAL MONOMER CONTENT

Hans Bauriedel, Duesseldorf, Fed. Rep. of Germany, assignor to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Jan. 11, 1985, Ser. No. 690,788
Claims priority, application Fed. Rep. of Germany, Jan. 14, 1984, 3401129
Int. Cl.[4] C08G *18/10, 18/32, 18/75*
U.S. Cl. 528—65 26 Claims

1. An isocyanate terminated polyurethane prepolymer having a low content of free isocyanate residual monomers which is the reaction product of

(A) a low viscosity first stage prepolymer having free NCO moieties and free OH moieties which is itself the reaction product of

(a) a first diisocyanate containing NCO moieties of differing reactivity and

(b) a polyhydric alcohol, in an OH:NCO ratio of about 0.55–4:1, so that only the more reactive NCO moieties are reacted with some of the OH moieties; and

(B) a second diisocyanate containing NCO moieties which are more reactive than the less reactive NCO moieties of the first diisocyanate, in an OH:NCO ratio of from equimolar to an excess of NCO, so that the NCO moieties of said second diisocyanate react with said remaining free OH moieties of said first stage prepolymer, to form said isocyanate terminated polyurethane prepolymer.

19. In an adhesive composition for bonding plastics, comprising a polyurethane prepolymer and at least one of a hardener, moisture, organic solvent, or an accelerator, the improvement wherein said polyurethane prepolymer has a low content of free isocyanate residual monomers and comprises the reaction product of

(A) a low viscosity first stage prepolymer having free NCO moieties and free OH moieties which is itself the reaction product of

(a) a first diisocyanate containing NCO moieties of differing reactivity and

(b) a polyhydric alcohol, in an OH:NCO ratio of about 0.55–4:1, so that only the more reactive NCO moieties are reacted with some of the OH moieties; and

(B) a second diisocyanate containing NCO moieties which are more reactive than the less reactive NCO moieties of the first diisocyanate,

in an OH:NCO ratio of from equimolar to an excess of NCO, so that the NCO moieties of said second diisocyanate react with said remaining free OH moieties of said first stage prepolymer.

4,623,710

AROMATIC POLYESTER MOLDING

Junji Takase; Kazuya Yonezawa, and Osamu Takamatu, all of Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kubushiki Kaisha, Osaka, Japan

Filed Aug. 5, 1985, Ser. No. 762,169
Claims priority, application Japan, Aug. 6, 1984, 59-164520
Int. Cl.[4] C08G *63/18, 63/46*
U.S. Cl. 528—176 9 Claims

1. A molding article comprising a molding of an aromatic polyester comprising an aromatic dicarboxylic and a bivalent phenol compound on which a layer of a metal or a metal oxide is deposited.

4,623,711

MODIFIED DISULFIDE POLYMER COMPOSITION AND METHOD FOR MAKING SAME FROM MERCAPTAN TERMINATED DISULFIDE POLYMER AND DIETHYL FORMAL MERCAPTAN TERMINATED POLYSULFIDE

Lester Morris, Encino, and Hakam Singh, Bradbury, both of Calif., assignors to Products Research & Chemical Corp., Glendale, Calif.

Filed Aug. 21, 1985, Ser. No. 768,402
Int. Cl.[4] C08G *75/12*
U.S. Cl. 528—375 23 Claims

1. A liquid polymer composition curable to a solid elastomer having excellent thermal stability, said composition consisting essentially of a polymeric mixture of

(a) from 90 mole percent to 25 mole percent of mercaptan terminated disulfide polymer of the formula $HS(RSS)_mR'SH$ and

(b) from 10 mole percent to 75 mole percent of diethyl formal mercaptan terminated polysulfide polymer of the formula $HS(RSS)_nRSH$; wherein in the formulae R is $—C_2H_4—O—CH_2—O—C_2H_4—$; R' is a divalent member selected from the group consisting of alkyl of from 2 to 12 carbon atoms; alkyl thioether of from 4 to 20 carbon atoms; alkyl ether of from 4 to 20 carbon atoms and one oxygen atom; alkyl ether of from 4 to 20 carbon atoms and from 2 to 4 oxygen atoms each of which is separated from the other by at least 2 carbon atoms, alicyclic of from 6 to 12 carbon atoms and aromatic lower alkyl; and the value m and n is such that the diethyl formal mercaptan terminated polysulfide polymer and the mercaptan terminated disulfide polymer have an average molecular weight of between about 1,000 and about 4,000.

4,623,712

METHOD FOR HIGH TEMPERATURE PHASE SEPARATION OF SOLUTIONS CONTAINING POLYMERS

Cyrus A. Irani, Katy, Tex.; Charles Cozewith, Westfield, and Stephen S. Kasegrande, Lincoln Park, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 473,741, Mar. 9, 1983, abandoned. This application Jun. 25, 1984, Ser. No. 623,850
Int. Cl.[4] C08F *6/12*
U.S. Cl. 528—498 18 Claims

1. A process for the recovery of hydrocarbon polymer from a solution of said polymer comprising:

(i) preparing the solution of polymer in a reactor;

(ii) adding to the thus-prepared solution of polymer an effective amount of at least one low molecular weight hydrocarbon selected from the group consisting of unsubstituted and halogenated C_1 alkanes and halogenated C_2–C_4 alkanes, alkenes, alkynes with the proviso that said hydro-

carbon is a gas at ambient temperature and pressure; provided, however, that where the low molecular weight hydrocarbon is a C_1 halogenated or unhalogenated alkane, it is utilized at about 2 to about 10.8 wt. % based on the polymer solution, and further provided that where the low molecular weight hydrocarbon is a C_2 halogenated or unhalogenated alkane, alkene, or alkyne, it is utilized at about 2 to about 21 wt. % based on the polymer solution; still further provided that where the low molecular weight hydrocarbon is a C_3–C_4 halogenated or unhalogenated hydrocarbon it is utilized at about 2 to about 30 wt. % based on the polymer solution;

(iii) subjecting said solution including said hydrocarbon to a temperature at which two liquid phases can form and a pressure sufficient to prevent the creation of a vapor phase;

(iv) adjusting said pressure such that a polymer-rich liquid phase and a polymer-lean liquid phase are formed;

(v) separating said polymer-rich liquid phase from said polymer-lean liquid phase; and

(vi) recovering said polymer from said polymer-rich liquid phase.

4,623,713

SOLVENT FRACTIONATION OF GUAYULE RUBBER

Robert T. Beinor, Uniontown, and William M. Cole, Norton, both of Ohio, assignors to The Firestone Tire & Rubber Co., Akron, Ohio

Filed Jul. 15, 1985, Ser. No. 754,554

Int. Cl.[4] C08C *4/00*

U.S. Cl. 528—930 **20 Claims**

1. A process for solvent fractionating a molecular weight rubber fraction from a guayule rubber source; comprising the steps of:

forming a mixture of the guayule rubber source and a solvent system, said solvent system having an effective end ratio of polar to hydrocarbon solvents to yield a separation of a desired molecular weight rubber fraction, said organic polar solvent selected from the group consisting of an alcohol having from 1 to 8 carbon atoms, an ester having from 3 to 8 carbon atoms, a ketone having from 3 to 8 carbon atoms, an ether having from 2 to 8 carbon atoms, and combinations thereof, said hydrocarbon solvent selected from the group consisting of an alkane having from 4 to 9 carbon atoms, a cycloalkane having from 5 to 10 carbon atoms, an aromatic or an alkyl substituted aromatic having from 6 to 12 carbon atoms, and combinations thereof; and

separating said resulting mixture and obtaining a molecular weight rubber fraction having a weight average molecular weight greater than that of said guayule rubber source.

4,623,714

NOVEL POLYPEPTIDES WITH AN α-AMYLASE-INHIBITING ACTION, A PROCESS FOR THEIR PREPARATION, THEIR USE AND PHARMACEUTICAL PRODUCTS

László Vértesy; Dominique Tripier, both of Eppstein, and Harald Ritzel, Mainz, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

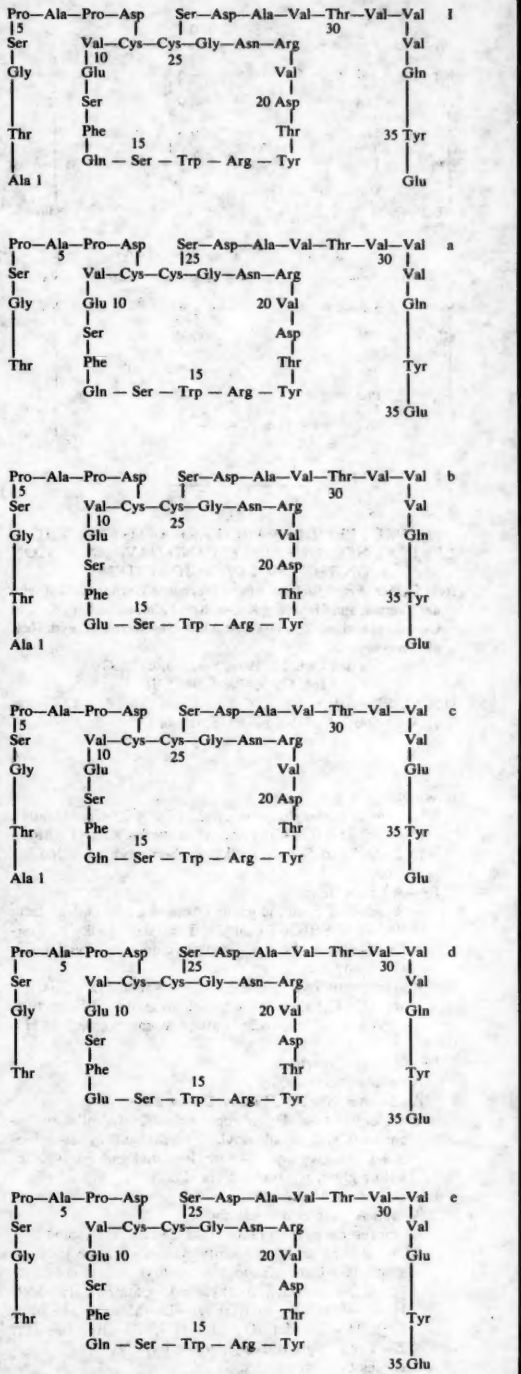
Filed Nov. 6, 1984, Ser. No. 668,839

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1984, 3402021

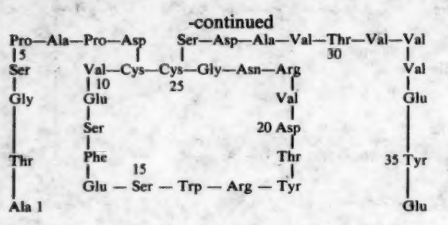
Int. Cl.[4] C07K *7/10*

U.S. Cl. 530—324 **3 Claims**

1. A cyclic polypeptide selected from the group consisting of:

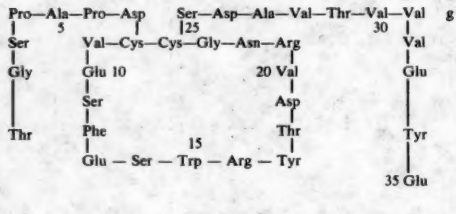


-continued



f

and



g

4,623,715

NOVEL PEPTIDES WHICH ARE ACTIVE ON THE CENTRAL NERVOUS SYSTEM AND HAVE AN ACTION ON THE CHOLINERGIC SYSTEM

Rolf Geiger, Frankfurt am Main; Hermann Gerhards, Hofheim am Taunus, and Hansjörg Kruse, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 22, 1984, Ser. No. 663,193

Int. Cl.[4] C07K *5/08, 5/10*

U.S. Cl. 530—330 **23 Claims**

1. A compound of the general formula I

$$R^4—A^5—A^6—R^7 \quad (I)$$

in which:

R^4 denotes benzyloxycarbonyl (Z), $(C_2–C_6)$-alkanoyl, $(C_6–C_{10})$-aryl-$(C_2–C_4)$-alkanoyl or cycloalkanoyl with up to 2 alkyl and 5–7 cycloalkyl carbon atoms, bonded via N_α, or

$R^3—A^4$, in which

A^4 is selected from the group consisting of Ala, Val, Leu, Ile, Met, Ser($C_1–C_6$-alkyl), Thr ($C_1–C_6$-alkyl), Cys($C_1–C_6$-alkyl), Phe, C-phenylqycine and Tyr($C_1–C_6$-alkyl) and

R^3 represents hydrogen, Z, $(C_2–C_6)$-alkanoyl, $(C_6–C_{10})$-aryl-$(C_2–C_4)$-alkanoyl or cycloalkanoyl with up to 2 alkyl and 5–7 cycloalkyl carbon atoms, bonded via H_α, or

$R^2—A^3—A^4$, in which

A^4 is as defined above,

A^3 denotes His, Ala, Phe or D-Lys and

R^2 is defined as R^3, or represents $(C_2–C_4)$-alkanoyl-ω-amino-$(C_5–C_8)$-n-alkanoyl, methylsulfonyl-ω-amino-$(C_5–C_8)$-n-alkanoyl, 4-methylsulfonylbenzoyl, succinoyl or glutaroyl, bonded via H_α, or

$R^1—A^2—A^3—A^4$, in which

A^3 and A^4, are as defined above,

A^2 represents pyroglutamyl, Glu, D-Glu or Ala and

R^1 is defined as R^2, or represents $(C_2–C_4)$-alkanoyl-ω-amino-$(C_3–C_4)$-n-alkanoyl, methylsulfonyl-ω-amino-$(C_3–C_4)$-n-alkanoyl, methylamido-glutaroyl, H—Met, H—D—Met, H—Met(O), H—D—Met(O), H—Met-(O_2), H—D—Met (O_2), H—Gly, Z—Gly, H—Tyr, Z—Tyr or pyroglutamyl, bonded via N_α,

A^5 denotes D—Lys or Lys,

A^6 denotes the radical of phenylalanine, N-methylphenylalanine, 4-$(C_1–C_4)$-alkoxyphenylalanine or 1,2,3,4,-tetrahydroisoquinoline-3-carboxylic acid and

R^7 denotes $NH—(CH_2)_n—NH_2$, $Gly—NH—(CH_2-)_m—NH_2$, $Gly—Lys—R^8$ or $Gly—D—Lys—R^8$, in which n represents an integer from 4 to 10, m represents an integer from 2 to 6 and R^8 represents 1-pyrrolidinyl, 1-piperidinyl, NH—R or NR_2, where $R=(C_1–C_4)$-alkyl,

and physiologically acceptable salts thereof.

4,623,716

PROCESS FOR THE PREPARATION AND PURIFICATION OF PEPTIDES

David Stevenson, Scarsdale, N.Y., and Mohammad A. Islam, Edison, N.J., assignors to USV Pharmaceutical Corp., Ft. Washington, Pa.

Filed Nov. 1, 1984, Ser. No. 667,025

Int. Cl.[4] C07K *1/00*

U.S. Cl. 530—333 **4 Claims**

1. A process for forming a disulfide bridge in a peptide containing at least one pair of cysteine moieties which are initially uncyclized, comprising maintaining a solution of the peptide at a pH above 8.5 but not exceeding 9.0, until the cyclization has taken place.

4,623,717

PASTEURIZED THERAPEUTICALLY ACTIVE PROTEIN COMPOSITIONS

Peter M. Fernandes, Lafayette, and John L. Lundblad, El Cerrito, both of Calif., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Continuation-in-part of Ser. No. 202,508, Oct. 31, 1930, which is a continuation-in-part of Ser. No. 127,351, Mar. 5, 1980, abandoned. This application Jun. 3, 1985, Ser. No. 740,659

The portion of the term of this patent subsequent to Apr. 3, 2001, has been disclaimed.

Int. Cl.[4] A61K *35/16, 37/02, 37/06;* **C07K** *3/28*

U.S. Cl. 530—380 **19 Claims**

1. A method of pasteurizing a composition comprising a thermally sensitive, therapeutically active protein selected from the group consisiting of antihemophilic factor (Factor VIII), fibronectin, antithrombin III, alpha-1-antitrypsin, and prekallikrein, which comprises

(a) mixing the protein composition with from 0.1 to 0.5 M of at least one amino acid and a compound selected from the group consisting of sugars and reduced sugars in an aqueous medium, said compound being present in the mixture in an amount of about 54% to saturation, on a weight to volume basis, and

(b) heating the mixture at a temperature of about 60°–75° C. and a pH of about 5.5–8.0 for at least about 10 hours to pasteurize the protein composition and render it substantially free of infective hepatitis.

4,623,718

NOVEL COMPOSITION OF MATTER OF ANTITHROMBIN III BOUND TO A HEPARIN FRAGMENT

Désiré J. Collen, Winksele, Belgium, assignor to KabiVitrum AB, Stockholm, Sweden

Filed Jun. 10, 1983, Ser. No. 503,105

Claims priority, application Sweden, Jun. 10, 1982, 8203611

Int. Cl.[4] C07K *17/10;* **A61K** *31/725, 37/64;* **C08B** *37/10*

U.S. Cl. 530—393 **4 Claims**

1. A heparin fragment with a molecular weight of 2,000 to, 5,500 covalently bound to antithrombin III.

4,623,719

DISAZO DYESTUFFS HAVING A MONOFLUOROTRIAZINYL GROUP

Toshio Niwa; Kiyoshi Himeno, and Toshio Hihara, all of Yokohama, Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

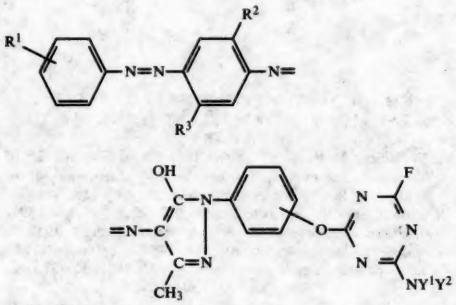
Continuation of Ser. No. 566,732, Dec. 29, 1983, abandoned. This application Mar. 24, 1986, Ser. No. 843,927

Claims priority, application Japan, Jan. 18, 1983, 58-6031

Int. Cl.[4] C07C *107/06*

U.S. Cl. 534—636 **3 Claims**

1. A disazo dyestuff for cellulose or cellulose-containing fibers of the formula:



wherein R^1 represents hydrogen or halogen; R^2 and R^3 each represent hydrogen or methyl; Y^1 and Y^2 each represent alkyl or alkenyl, or Y^1 and Y^2 taken together with the nitrogen atom to which they are attached are a 5-membered or 6-membered nitrogen containing heterocyclic ring, and the total number of carbon atoms in groups Y^1 and Y^2 is no more than 18.

4,623,720

1:2 METAL COMPLEXES OF AZO COMPOUNDS HAVING A CENTRAL SUBSTITUTED PHENYLENESULFONYLAMINOPHENYLENE RADICAL

Herbert Holliger, Allschwil, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

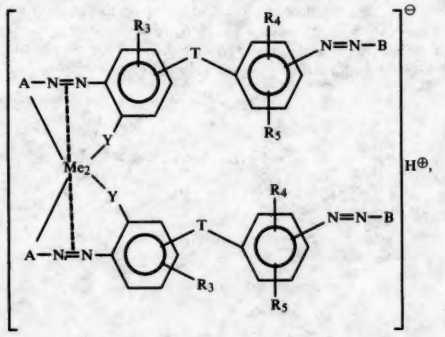
Continuation-in-part of Ser. No. 129,601, Mar. 12, 1980, abandoned. This application Jun. 4, 1981, Ser. No. 270,571

Claims priority, application Switzerland, Mar. 15, 1979, 2455/79

Int. Cl.[4] C09B *45/24, 45/26, 45/28, 45/30*

U.S. Cl. 534—700 **52 Claims**

1. A 1:2 metal complex of the formula



or a salt thereof each cation of which is non-chromophoric, wherein

each A is independently the radical of a metallized diazo component or a metallized coupling component,

each B is independently the radical of a non-metallized diazo component or a non-metallized coupling component, with the proviso that when an A is the radical of a metallized diazo component, the B of the same azo unit is the radical of a non-metallized coupling component,

each R_3 independently is hydrogen, chloro, bromo, C_{1-4}alkyl, C_{1-4}alkoxy, sulfo, nitro or cyano when the T attached to the same ring is $—N(R_1)SO_2—$ and the A of the A—N=N— group attached to the same ring is the radical of a metallized coupling component and otherwise is hydrogen, chloro, bromo, C_{1-4}alkyl or C_{1-4}alkoxy,

each R_4 independently is hydrogen or carboxy when the T attached to the same ring is $—SO_2N(R_1)—$ and the B of the B—N=N— group attached to the same ring is the radical of a non-metallized coupling component, is hydroxy or amino when the T attached to the same ring is $—SO_2N(R_1)—$ and the B of the B—N=N— group attached to the sae ring is the radical of a non-metallized diazo component and is hydrogen, carboxy or C_{1-4}alkoxy when the T attached to the same ring is $—N(R_1)SO_2—$,

with the proviso that R_4 is hydrogen when it is ortho to the B—N=N— group and the B of said B—N=N— group contains a metallizable substituent ortho to the —N=N— radical thereof,

each R_5 independently is hydrogen, chloro, bromo, C_{1-4}alkyl, C_{1-4}alkoxy, sulfo, nitro or cyano when the T attached to the same ring is $—SO_2N(R_1)—$ and the B of the B—N=N— group attached to the same ring is the radical of a non-metallized coupling component and otherwise is hydrogen, chloro, bromo, C_{1-4}alkyl or C_{1-4}alkoxy, with the proviso that R_5 is other than C_{1-4}alkoxy when it is ortho to the B—N=N— group and the B of said B—N=N— group contains a metallizable substituent ortho to the —N=N— radical thereof,

each T is independently $—SO_2N(R_1)—$ or $—N(R_1)SO_2—$

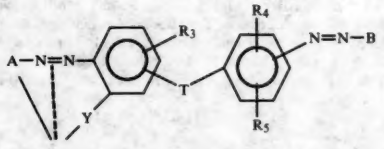
wherein R_1 is hydrogen; C_{1-4}alkyl; C_{1-4}alkyl substituted by phenyl or carboxy or C_{2-4}alkyl substituted in 2-, 3- or 4-position by phenoxy, C_{1-4}alkoxy, chloro or hydroxy,

with the proviso that T is $—N(R_1)SO_2—$ when the A of the A—N=N— group attached to the same ring is the radical of a metallized diazo component and is $—SO_2N(R_1)—$ when the B of the B—N=N— group attached to the same ring is the radical of a non-metallized diazo component,

each Y independently is —O— or —COO— when the A of the A—N=N— group ortho thereto is the radical of a metallized coupling component and is —O— or —NH— when the A of the A—N=N— group ortho thereto is the radical of a metallized diazo component, and

Me_2 is a trivalent 1:2 metal complex-forming metal ion,

with the proviso that each azo unit of the 1:2 metal complex contains at least one water-solubilizing group, wherein each azo unit has the formula



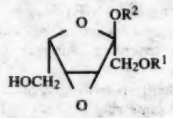
4,623,721

SYNTHESIS OF L-FRUCTOSE AND DERIVATIVES THEREOF

Chyi-Cheng Chen, Gaithersburg, Md., and Roy L. Whistler, West Lafayette, Ind., assignors to Purdue Research Foundation, West Lafayette, Ind.

Filed May 23, 1984, Ser. No. 613,184
Int. Cl.[4] C07H *1/00, 9/04, 3/10*
U.S. Cl. 536—4.1 14 Claims

1. A 3,4-anhydro-L-sorbose having the formula:



wherein R^1 represents a leaving group R^2 represents a (lower-)alkyl group, or R^1 and R^2 taken together represent a blocking group.

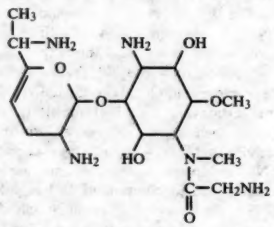
4,623,722

FORTIMICIN FACTOR KG_3

Seigo Takasawa, Hadano; Kunikatsu Shirahata, Machida; Seiji Sato, Machida, and Keiichi Takahashi, Machida, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Division of Ser. No. 17,276, Mar. 5, 1979, Pat. No. 4,241,182. This application Feb. 11, 1980, Ser. No. 120,116
Claims priority, application Japan, Mar. 3, 1978, 53-23552
Int. Cl.[4] C07H *15/224*
U.S. Cl. 536—16.1 1 Claim

1. Fortimicin KG_3, a composition of matter which has antibacterial activity, the structural formula:



and the following physicochemical properties:

(1) Melting point: 135°–138° C.,

(2) Specific rotation: $[\alpha]_D^{20} = +185°$ (c=0.265, H_2O),

(3) Infrared absorption spectrum (KBr): 3370, 2940, 1640, 1580, 1462, 1110 cm^{-1} and

(4) The CMR spectrum [deuterium oxide solution containing deuteriochloric acid (pD=1.2)]: δ(ppm): 168.8, 146.7, 99.5, 95.9, 76.1, 73.9, 71.4, 66.5, 57.3, 54.2, 52.9, 49.6, 47.2, 41.4, 32.8, 22.2, 16.9.

4,623,723

PROCESS FOR SEPARATING RIBONUCLEIC ACIDS FROM A SOLUTION CONTAINING DEOXYRIBONUCLEIC ACIDS

Reinhold Keller, Bad Soden am Taunus, and Merten Schlingmann, Königstein, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Mar. 9, 1984, Ser. No. 588,068
Claims priority, application Fed. Rep. of Germany, Mar. 12, 1983, 3308932
Int. Cl.[4] C07H *15/12, 17/00*
U.S. Cl. 536—27 6 Claims

1. A process for separating deoxyribonucleic acid from ribonucleic acid in crude nucleic acid solutions, in which the natural difference in molecular weight between deoxyribonucleic acid and ribonucleic acid has been largely retained, which comprises subjecting the crude nucleic acid solution to an ultra-filtration process, the deoxyribonucleic acid being held back and the ribonucleic acid permeating through.

2. The process as claimed in claim 1, wherein a membrane with a molecular weight separating limit of 100,000 is employed.

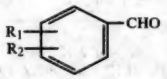
4,623,724

METHOD FOR THE PRODUCTION OF NUCLEAR SUBSTITUTED CINNAMOYLANTHRANILIC ACID SALTS

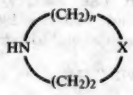
Kinji Iizuka, Matsumoto; Tetsuhide Kamijo, Shiojiri; Ryoji Yamamoto, and Hiromu Harada, both of Matsumoto, all of Japan, assignors to Kissei Pharmaceutical Co., Ltd., Japan

Division of Ser. No. 577,758, Feb. 7, 1984, Pat. No. 4,486,597, which is a continuation of Ser. No. 405,159, Aug. 4, 1982, abandoned. This application Aug. 14, 1984, Ser. No. 640,588
Claims priority, application Japan, Sep. 1, 1981, 57-137344
Int. Cl.[4] C07D *295/00*
U.S. Cl. 544—107 2 Claims

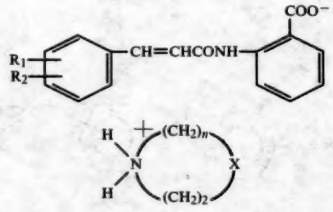
1. A process for the production of a nuclear substituted cinnamoylanthranilic acid salt which comprises reacting in an inert organic solvent medium a nuclear substituted benzaldehyde derivative corresponding to the formula:



where each of R_1 and R_2 is an alkoxy group having about 1–3 carbon atoms, with 2-carboxymalonanilic acid and a cyclic amine corresponding to the formula:



where X is a methylene group or an oxygen atom, n is 1 or 2 with the proviso that n is 2 when X is an oxygen atom, and said cyclic amine is employed in about an equimolar amount with respect to the substituted benzaldehyde derivative reactant or 2-carboxymalonanilic acid reactant, to produce a crystalline precipitate of a salt product corresponding to the formula:



where R_1, R_2, n and X are as previously defined.

4,623,725

[1,2,4]TRIAZOLO[4,3-A]QUINOXALINE-4-AMINE DERIVATIVES

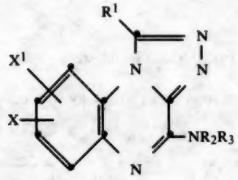
Saul B. Kadin, New London, and Reinhard Sarges, Mystic, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Continuation of Ser. No. 609,674, May 14, 1984, abandoned, which is a continuation of Ser. No. 528,362, Sep. 2, 1983, abandoned, which is a continuation-in-part of Ser. No. 434,771, Oct. 18, 1982, abandoned. This application Nov. 8, 1985, Ser. No. 796,134

Int. Cl.[4] C07D *487/04, 241/44;* A01K *31/495*

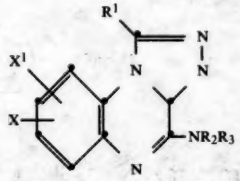
U.S. Cl. 544—346 32 Claims

6. A compound selected from the group consisting of [1,2,4]triazolo[4,3-a]quinoxaline-4-amine bases of the formula:



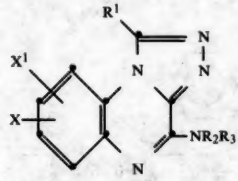
and the pharmaceutically acceptable acid addition salts thereof, wherein X and X^1 are each hydrogen, R_1 is trifluoromethyl, and R_2 and R_3 are each hydrogen or lower alkyl.

7. A compound selected from the group consisting of [1,2,4]triazolo[4,3-a]quinoxaline-4-amine bases of the formula:



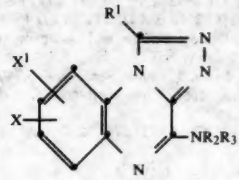
and the pharmaceutically acceptable acid addition salts thereof, wherein X and X^1 are each hydrogen, R_1 is lower alkyl, R_2 is hydrogen, ethyl or acetyl and R_3 is acetyl.

11. A compound selected from the group consisting of [1,2,4]triazolo[4,3-a]quinoxaline-4-amine bases of the formula:



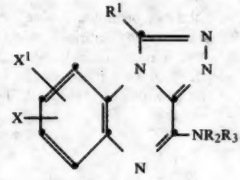
and the pharmaceutically acceptable acid addition salts thereof, wherein X and X^1 are each selected from the group consisting of hydrogen, fluorine, chlorine, bromine and methoxy, with at least one of X and X^1 being fluorine, and R_1 and R_2 are each hydrogen and R_3 is lower alkyl.

14. A compound selected from the group consisting of [1,2,4]triazolo[4,3-a]quinoxaline-4-amine bases of the formula:



and the pharmaceutically acceptable acid addition salts thereof, wherein X and X^1 are each selected from the group consisting of hydrogen, fluorine, chlorine, bromine and methoxy, with at least one of X and X^1 being chlorine, and R_1 is lower alkyl or trifluoromethyl, R_2 is hydrogen and R_3 is hydrogen, lower alkyl or alkanoyl having from two to five carbon atoms.

23. A compound selected from the group consisting of [1,2,4]triazolo[4,3-a]quinoxaline-4-amine bases of the formula:



and the pharmaceutically acceptable acid addition salts thereof, wherein X and X^1 are each selected from the group consisting of hydrogen, fluorine, chlorine, bromine and methoxy, with at least one of X and X^1 being fluorine, and R_1 is trifluoromethyl, R_2 is hydrogen and R_3 is hydrogen, lower alkyl or alkanoyl having from two to five carbon atoms.

4,623,726

METHOD FOR OXIDIZING ALKYL GROUPS ON PYRIDINE, QUINOLINE AND BENZENE RING COMPOUNDS TO CARBOXYLIC ACIDS UNDER BASIC CONDITIONS

William A. Daniels, Belle Mead, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Apr. 18, 1983, Ser. No. 485,769

Int. Cl.[4] C07D *215/54, 213/807;* C07C *51/16*

U.S. Cl. 546—168 14 Claims

1. A method for the oxidation of one or more CH_3 groups to a carboxylic acid product, wherein said CH_3 group is attached to a pyridine, quinoline or benzene ring compound, said method comprising: reacting said CH_3 substituted compound with a hydroxide or oxide of formula (I)

$$X_mY_n \qquad (I)$$

wherein X is copper, cobalt or silver; Y is oxygen or hydroxyl; m is an integer of 1 or 2; n is an integer of 2 to 6; and $n > m$; with a molar excess of 50% to 250% of an aqueous hypochlorite salt at a temperature of 25° C. to 95° C. at pH>9.

4,623,727

8-HYDROXY-QUINOLINE DERIVATIVES FOR THE PROTECTION OF CULTIVATED PLANTS

Adolf Hübele, Magden, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

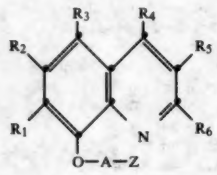
Filed Feb. 11, 1983, Ser. No. 465,740

Claims priority, application Switzerland, Feb. 17, 1982, 980/82

Int. Cl.[4] C07D *215/26, 215/28*

U.S. Cl. 546—178 5 Claims

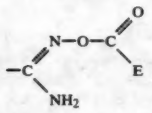
1. A compound of the formula



wherein

R_1 is hydrogen, chlorine, bromine, iodine or nitro; R_2 is hydrogen; R_3 is hydrogen, fluorine, chlorine, bromine, iodine, C_1–C_3-alkyl or nitro; R_4 is hydrogen, bromine or methyl; R_5 is hydrogen; R_6 is hydrogen or methyl;

A is any one of the groups $—CH_2—$, $—CH_2—CH_2—$ or $—CH(CH_3)—$, and Z is



in which E is $—OR_8$ or $—SR_9$, wherein R_8 and R_9 are C_1–C_8-alkyl which is unsubstituted or substituted by halogen; C_2–C_4-alkenyl; C_3–C_6-alkynyl; phenyl which is unsubstituted or substituted by halogen, C_1–C_3-alkyl, C_1–C_3-alkoxy, trifluoromethyl or nitro; or benzyl which is unsubstituted or substituted by halogen or nitro; including herbicidally acceptable acid addition salts thereof and herbicidally acceptable metal complexes thereof.

4,623,728

INTERMEDIATES FOR 1,3-DISUBSTITUTED PIPERIDINE COMPOUNDS AS NEUROLEPTIC AGENTS

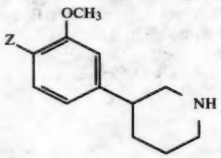
Reinhard Sarges, Mystic, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 634,910, Jul. 26, 1984, Pat. No. 4,593,037. This application Feb. 14, 1986, Ser. No. 829,634

Int. Cl.[4] C07D *211/22*

U.S. Cl. 546—236 2 Claims

1. A compound of the formula



and the acid-addition salts thereof, wherein Z is fluoro or chloro.

4,623,729

ACYLALKYLAMINOCARBONYL SUBSTITUTED AMINO AND IMINO ACID COMPOUNDS

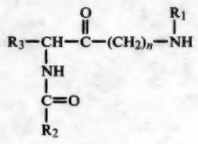
Sesha I. Natarajan, Neshanic Station, and Eric M. Gordon, Pennington, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jul. 22, 1982, Ser. No. 400,798

Int. Cl.[4] C07D *213/60*

U.S. Cl. 546—256 3 Claims

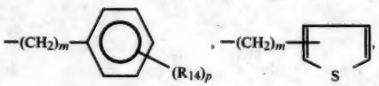
1. A compound of the formula

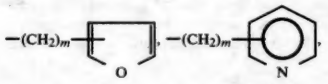


including its hydrochloride salt wherein

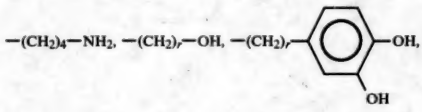
n is one or two;

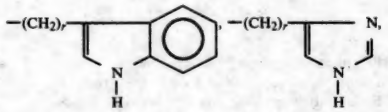
R_1 is hydrogen, lower alkyl, halo substituted lower alkyl,



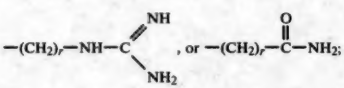


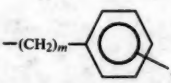
$—(CH_2)_m$—cycloalkyl, $—(CH_2)_2—NH_2$, $—(CH_2)_3—NH_2$,

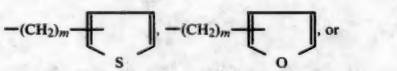


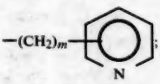


$—(CH_2)_r—SH$, $—(CH_2)_r—S$—lower alkyl,

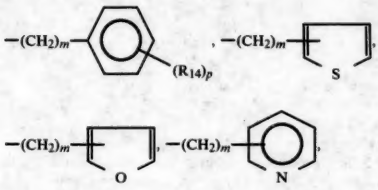


R_2 is 

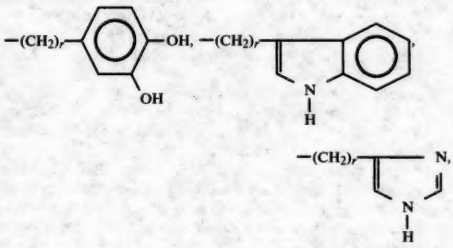




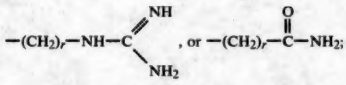
R_3 is hydrogen, lower alkyl,



halo substituted lower alkyl, $-(CH_2)_m$-cycloalkyl,



$-(CH_2)_r-NH_2$, $-(CH_2)_r-SH$, $-(CH_2)_r-OH$, $-(CH_2)_r-S$-lower alkyl,



r is an integer from 1 to 4;

R_{14} is hydrogen, lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro, bromo, fluoro, trifluoromethyl, or hydroxy;

m is zero, one, two, three, or four; and

p is one, two or three provided that p is more than one only if R_{14} is hydrogen, methyl, methoxy, chloro, or fluoro.

4,623,730

PROCESSES FOR PREPARING 4-AMINO-3-IMIDAZOLIN-2-ONE AND (2-METHOXY-2-IMINOETHYL)UREA

Siegfried Maecke, Raubling-Kirchdorf; Adolf Bauer; Hubert Vogt, both of Raubling, and Helmut Wolf, Neubeuern, all of Fed. Rep. of Germany, assignors to Diamalt Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Feb. 21, 1984, Ser. No. 581,852

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1983, 3305778

Int. Cl.[4] C07D *233/88;* **C07C** *127/15*

U.S. Cl. 548—308 **8 Claims**

1. (2-methoxy-2-iminoethyl)urea.

2. A process of for preparing essentially only (2-methoxy-2-iminoethyl)urea comprising reacting cyanomethylurea in methanol in the presence of an effective amount of a catalytic base at a temperature of 0°–35° C.

4. A process for preparing essentially only 4-amino-3-imidazolin-2-one comprising reacting cyanomethylurea in methanol in the presence of an effective amount of a catalytic base at a temperature of 50° C. to reflux temperature.

4,623,731

POLYISOCYANATE DERIVATIVES WHEREIN THE ISOCYANATE GROUP(S) IS/ARE REVERSIBLY BLOCKED, BY 3-METHYLPYRAZOL-1H-YL

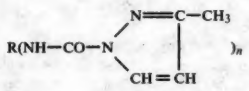
Mikhail G. Ivanov, prospekt Tsiolkovskogo, 31, kv. 47; Veniamin G. Golov, prospekt Pobedy 3, kv. 11, both of Dzerzhinsk Gorkovskoi oblasti; Vladimir N. Kuzmin, ulitsa Dobroselskaya, 195-a, kv. 48; Aida I. Alyakrinskaya, ulitsa Voroshilova, 6, kv. 2, both of Vladimir; Roman Y. Mushy, Gvardeisky prospekt, 45, kv. 15; Alexei D. Kovalev, prospekt Kosmonavtov, 15, kv. 46, both of Severodonetsk Voroshilovgradskoi oblasti; Nadezhda V. Shutova, prospekt Leninskogo Komsomola, 42, kv. 103, Dzerzhinsk Gorkovskoi oblasti; Jury A. Rodionov, prospket Tsiolkovskogo, 81, kv. 31, Dzerzhinsk Gorkovskoi oblasti; Igor I. Molev, ulitsa Griboedova, 36, kv. 22, Dzerzhinsk Gorkovskoi oblasti; Ljudmila S. Yakovleva, Balaklavsky prospekt, 20, korpus 1, kv. 52, Moscow; Vitaly B. Berezin, Ryazansky prospekt, 51, kv. 106, Moscow; Alexei I. Petrashko, ulitsa Tashkentskaya, 24, korpus 1, kv. 181, Moscow; Gennady M. Shuev, ulitsa Profsojuznaya, 18, kv. 64; Boris A. Bukin, ulitsa Profsojuznaya, 40, kv. 17, both of Narofominsk Moskoskoi oblasti; Tamara M. Belkina, deceased, late of Moscow, and by Naum S. Belkin, administrator, ulitsa Flotskaya, 18, kv. 94, Moscow, all of U.S.S.R.

Filed Jan. 25, 1984, Ser. No. 573,795

Int. Cl.[4] C07D *231/14, 251/32, 403/10*

U.S. Cl. 548—374 **4 Claims**

1. A carbamic acid derivative having the following general formula:



wherein R is an aromatic radical selected from the group consisting of polymethylene polyphenylene, methylene diphenylene and methine triphenylene and wherein n=2 to 5.

4,623,732

PROCESS FOR THE PREPARATION OF N-ALKYLPHTHALIMIDE AND COPOLYMER DERIVED THEREFROM

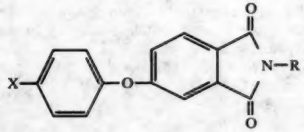
Edward N. Peters, Lenox, Mass., assignor to General Electric Company, Pittsfield, Mass.

Filed Nov. 18, 1983, Ser. No. 553,174

Int. Cl.[4] C07D *209/48, 403/10*

U.S. Cl. 548—480 **3 Claims**

1. A compound of the formula:



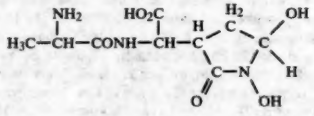
wherein R is lower alkyl of from 1 to 6 carbons and X is Cl, Br or I.

4,623,733
ANTIMICROBIAL PEPTIDE

Eiji Higashide, Takarazuka, and Satoshi Horii, Sakai, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 300,285, Sep. 8, 1981, Pat. No. 4,575,489.
This application Jul. 10, 1984, Ser. No. 629,499
Claims priority, application Japan, Sep. 18, 1980, 55-130298
Int. Cl.[4] C07D *207/46*
U.S. Cl. 548—542 1 Claim

1. Peptide B-52653 of the formula:



4,623,734
METHOD FOR PRODUCTION OF MALEIMIDES

Yuichi Kita, Akashi; Kentaro Sakamoto, Hyogo; Masao Baba, and Atsushi Okubo, both of Himeji, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Japan

Filed Jun. 14, 1985, Ser. No. 745,414
Claims priority, application Japan, Jun. 18, 1984, 59-123747; Jul. 10, 1984, 59-141309; Mar. 6, 1985, 60-42798; Apr. 4, 1985, 60-70071
Int. Cl.[4] C07D *207/448*
U.S. Cl. 548—545 20 Claims

1. A method for the production of maleimides, which comprises subjecting maleinamic acids to ring-closure imidation in an aprotic non-polar organic organic solvent capable of forming an azeotrope with water in the presence of an acid catalyst and a metal-containing compound selected from the group consisting of oxides, acetates, maleates, succinates, nitrates, phosphates, chlorides, bromides, of zinc, chromium, cobalt, nickel, iron, aluminum iodides, and sulfates of zinc, chromium, cobalt, nickle, iron, aluminum, and palladium at a temperature in the range of 120° to 250° C. while removing the formed water in the form of an azeotrope with said organic solvent and thereafter purifying the produced crude maleimides.

4,623,735
METAL COMPLEX REACTION PRODUCT OF FURFURYLAMINE AND A METAL CARBONYL

Robert B. Petersen, Los Angeles, Calif., assignor to Hitco, Newport Beach, Calif.

Division of Ser. No. 611,729, May 18, 1984, Pat. No. 4,588,799.
This application Jul. 17, 1985, Ser. No. 755,800
Int. Cl.[4] C07D *307/53*
U.S. Cl. 549—206 4 Claims

1. A metal complex comprising the reaction product of furfurylamine and a metal carbonyl selected from the group consisting of tungsten carbonyl, molybdenum carbonyl and chromium carbonyl.

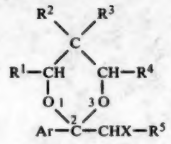
4,623,736
ARYLALKANOIC ACID PROCESS IMPROVEMENT

Jerry A. Walker, and Sanjay I. Amin, both of Oshtemo Township, Kalamazoo County, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Jul. 9, 1982, Ser. No. 396,967
Int. Cl.[4] C07D *319/06;* C07C *69/76*
U.S. Cl. 549—369 8 Claims

1. A process which comprises

contacting and reacting a ring substituted alicyclic glycol derived 6-membered ring ketal derivative of a 1-haloalkyl aryl ketone of formula



(I)

wherein

Ar is an aromatic ring containing radical containing from 6 to 12 carbon atoms in which an aryl ring carbon of the Ar moiety is bonded to the C-2 ketal carbon atom;

R^1 is hydrogen, C_1 to C_4-alkyl or phenyl;

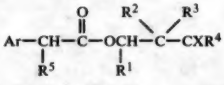
each of R^2 and R^3 is hydrogen, C_1 to C_4-alkyl or phenyl;

R^4 is hydrogen, C_1 to C_4-alkyl or phenyl, such that the C_1 to C_4-substituents in the R^1, R^2, R^3 or R^4 positions are essentially linear alkyl groups and the resulting ketal compound (I) is a liquid at temperature of about 100° C. to about 200° C.;

X is chlorine, bromine or iodine; and

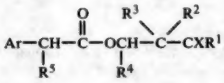
R^5 is C_1 to C_3-alkyl, with a catalytic amount of a zinc C_3 to C_{20} carboxylic acid salt which zinc salt is soluble in the ketal (I) reaction mixture;

at a temperature ranging from 100° to about 200° C. in an essentially homogeneous, solvent-free liquid form for a time sufficient to effect conversion of the ketal to a halogenated ester having a formula selected from the group consisting of



(II)

and



(III)

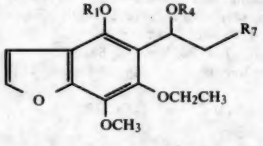
wherein Ar, R^1, R^2, R^3, R^4 and X are as defined above.

4,623,737
SYNTHESIS OF PRECURSORS OF ANTI-ATHEROSCLEROTIC FUROCHROMONES

Ayako Yamashita, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Dec. 7, 1984, Ser. No. 679,523
Int. Cl.[4] C07D *307/86*
U.S. Cl. 549—471 4 Claims

1. A process for preparing a compound of the formula II



II

wherein R_1 is —C(O)—R_2;

wherein R_2 is (C_1–C_5) n-alkyl;

wherein R_4 is

(a) —$SiR_{12}R_{13}R_{14}$,

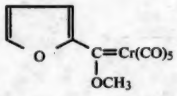
(b) benzyl, or

(c) benzyl substituted by 1 to 3 (C_1–C_4)alkyl or 1 or 3 (C_1–C_4)methoxy groups;

wherein R_7 is

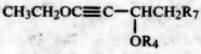
(a) hydrogen,
(b) —C(O)—R_6, or
(c) —C(OR_{20})(OR_{21})R_6;
wherein R_6 is
(a) (C_1–C_8)alkyl,
(b) (C_2–C_8)alkoxymethyl,
(c) trifluoromethyl,
(d) phenoxymethyl,
(e) phenylthiomethyl, or
(f) —CH_2—S(O)$_n$—R_{22};
wherein n is 0, 1, or 2;
wherein R_{12}, R_{13}, and R_{14} are the same or different and are:
(a) (C_1–C_4)alkyl, or
(b) phenyl;
wherein R_{20} and R_{21} are the same or different and are
(a) C_1–C_4)alkyl, or
(b) R_{20} and R_{21} taken together form a cyclic group of from 5 to 6 atoms; and
wherein R_{22} is (C_1–C_5)alkyl;
which comprises reacting a chromium compound of the formula III

III



with an acetylenic compound of the formula IV

IV



in the presence of an acid anhydride of the formula XI

XI

and triethylamine to yield the formula II compound.

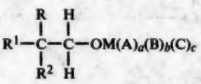
4,623,738

NEOALKOXY ORGANO-TITANATES AND ORGANO-ZIRCONATES USEFUL AS COUPLING AND POLYMER PROCESSING AGENTS

Gerald Sugerman, Allendale, N.J., and Salvatore J. Monte, Staten Island, N.Y., assignors to Kenrich Petrochemicals, Inc., Bayonne, N.J.

Continuation-in-part of Ser. No. 609,727, May 14, 1984, and a continuation-in-part of Ser. No. 651,119, Sep. 14, 1984. This application Apr. 22, 1985, Ser. No. 725,437
Int. Cl.[4] C07F 7/28
U.S. Cl. 556—17 **18 Claims**

1. An organo-zirconate having the formula:



wherein M is zirconium, R, R^1 and R^2 are each a monovalent alkyl, alkenyl, alkynyl, aralkyl, aryl or alkaryl group having up to 20 carbon atoms, or a halogen or ether substituted derivative thereof, and, in addition, R^2 may also be an oxy derivative or an ether substituted oxy derivative of said groups; A, B and C are each a monovalent aroxy, thioaroxy, diester phosphate, diester pyrophosphate, oxyalkylamino, sulfonyl or carboxyl; and a+b+c=3.

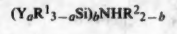
4,623,739

NITROGEN-CONTAINING ORGANOSILICON COMPOUNDS

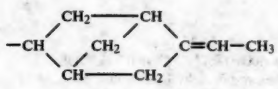
Junichiro Watanabe, and Yuichi Funahashi, both of Ohta, Japan, assignors to Toshiba Silicone Co., Ltd., Tokyo, Japan

Filed Jan. 24, 1986, Ser. No. 822,981
Claims priority, application Japan, Mar. 26, 1985, 60-61261
Int. Cl.[4] C07F 7/10
U.S. Cl. 556—410 **1 Claim**

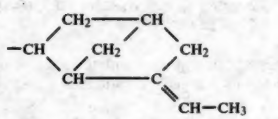
1. A nitrogen-containing organosilicon compound represented by the general formula:



wherein R^1 stands for a saturated or unsaturated monovalent hydrocarbon group of 1 to 8 carbon atoms, R^2 for a saturated or unsaturated monovalent hydrocarbon group of 1 to 6 carbon atoms, Y for



or



a for an integer of the value of 1 to 3, and b for an integer of the value of 1 or 2.

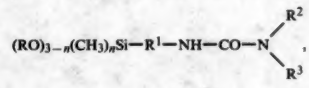
4,623,740

N,N'- AND N,N',N'-SUBSTITUTED SILYLUREAS AND PROCESS FOR THEIR PRODUCTION

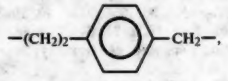
Ulrich Deschler, Birkenweg 1, D-6450 Hanau 9, Fed. Rep. of Germany; Wolfgang Buder, Rua do Lagarto Azul No. 1000, 40.000 Salvador/Bahia, Brazil; Peter Kleinschmit, Wildaustrasse 19, D-6450 Hanau 9, and Rudolf Michel, Josefstrasse 36, D-6463 Freigericht, both of Fed. Rep. of Germany

Filed Jul. 1, 1985, Ser. No. 750,272
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1984, 3424534
Int. Cl.[4] C07F 7/10
U.S. Cl. 556—421 **15 Claims**

1. A N,N' or N,N',N'-substituted silylurea of the formula (I)

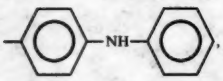


where
n is 0 or 1
R is C_1–C_6 alkyl, phenyl, C_5–C_8 cycloalkyl
R^1 is —(CH_2)$_3$—,



R^2, R^3 are
C_1–C_3 alkyl, terminally substituted by an amino-, thio- or cyano group,

$-(C_2H_4NH)_mH$ where m is 2 or 3,
C_3–C_{18} alkenyl,



benzyl, pyridyl, triazyl or such a group having at least one substituent which is an amino, hydroxyl, thio, C_1–C_3 alkoxy, nitro, or carboxyl group or a silyl group, R^2 and R^3 together with the nitrogen atom and 0, 1, or 2 further heteroatoms forms a monovalent 5 to 14 numbered saturated or unsaturated cyclic group having 2 to 12 carbon atoms, with the proviso that R^2 can also be hydrogen, C_1–C_{18} alkyl or C_3–C_{18} alkenyl.

4,623,741

CHLOROSILANE COMPOUNDS

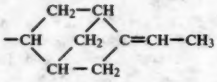
Junichiro Watanabe, and Yuichi Funahashi, both of Ohta, Japan, assignors to Toshiba Silicone Co., Ltd., Tokyo, Japan

Filed Jan. 24, 1986, Ser. No. 822,979
Claims priority, application Japan, Mar. 26, 1985, 60-61260
Int. Cl.[4] C07F 7/08
U.S. Cl. 556—465 **1 Claim**

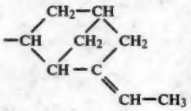
1. An ethylidenenorbornyl group-containing chlorosilane compound represented by the general formula:

$$Y_a(R^1)_bSi(Cl)_{4-a-b}$$

wherein R^1 stands for a saturated or unsaturated monovalent hydrocarbon group of 1 to 8 carbon atoms, Y for



or



a for an integer of the value of 1 to 3, b for an integer of the value of 0 to 2, and a+b for an integer of the value of 1 to 3.

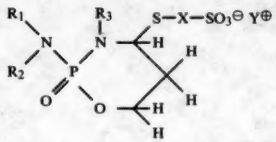
4,623,742

OXAZAPHOSPHORIN-4-THIO-ALKANESULPHONIC ACIDS, AND NEUTRAL SALTS THEREOF

Gerhard Scheffler; Ulf Niemeyer; Norbert Brock, all of Bielefeld, and Jörg Pohl, Halle, all of Fed. Rep. of Germany, assignors to ASTA-Werke Aktiengesellschaft Chemische Fabrik, Belefeld, Fed. Rep. of Germany

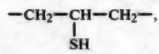
Continuation-in-part of Ser. No. 356,636, Mar. 10, 1982, abandoned. This application Dec. 19, 1984, Ser. No. 683,374
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1981, 3111428
Int. Cl.[4] C07F 9/21
U.S. Cl. 558—81 **6 Claims**

1. The neutral salts in the cis-configuration of oxazaphosphorin-4-thio-alkanesulphonic acids corresponding to formula I



I

in which
R_1 is 2-chloroethyl,
R_2 is hydrogen or 2-chloroethyl,
R_3 is hydrogen or 2-chloroethyl,
X is $-CH_2-CH_2-$, $-(CH_2)_3-$ or



and
$Y^{\oplus}$ is the cyclohexylammonium, the ammonium, the guanidinium or the sodium cation.

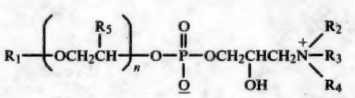
4,623,743

PHOSPHORIC ESTERS AND METHOD FOR PREPARING THE SAME

Tomihiro Kurosaki, Osaka, and Mitsuharu Masuda, Wakayama, both of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Feb. 11, 1985, Ser. No. 700,033
Claims priority, application Japan, Jan. 3, 1984, 59-39042
Int. Cl.[4] C07F 9/09
U.S. Cl. 558—105 **2 Claims**

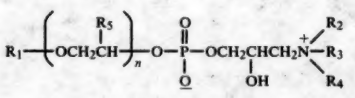
1. A phosphoric ester of the following general formula (I)



(I)

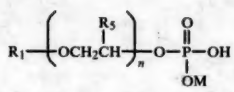
which R_1 represents a saturated or unsaturated, linear or branched and substituted or unsubstituted hydrocarbon group having from 8 to 32 carbon atoms, R_2, R_3 and R_4 are the same or different and represent a saturated or unsaturated hydrocarbon group having from 1 to 4 carbon atoms, R_5 represents a hydrogen atom a saturated or unsaturated hydrocarbon group having from 1 to 4 carbon atoms, and n is an integer of from 0 to 56.5.

2. Method for preparing a phosphoric acid of the general formula (I)



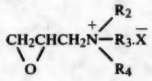
(I)

in which R_1 represents a hydrogen atom a saturated or unsaturated, liner or branched and substituted or unsubstituted hydrocarbon group having from 8 to 32 carbon atoms, R_2, R_3 and R_4 are the same or different and represents a saturated or unsaturated hydrocarbon group having from 1 to 4 carbon atoms, R_5 represents a saturated or unsaturated hydrocarbon group having from 1 to 4 carbon atoms, and n is an integer of from 0 to 56.5, characterized by interacting a phosphoric monoester of the general formula (II)



(II)

in which R_1, R_5 and n have the same meanings as defined above, respectively, and M represents an alkali metal, and a glycidyl trialkylammonium salt of the general formula (III)



(III)

in which R_2, R_3 and R_4 have, respectively, the same meanings as defined above, and X represents an anion.

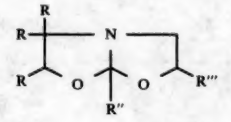
4,623,744

PHOSPHOROUS CONTAINING DERIVATIVES OF BICYCLIC AMIDE ACETALS

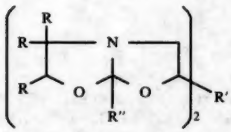
Anil B. Goel, Worthington, Ohio, assignor to Ashland Oil, Inc., Russell, Ky.

Filed Jan. 31, 1985, Ser. No. 696,964
Int. Cl.[4] C07F 9/46, 9/30
U.S. Cl. 558—170 **15 Claims**

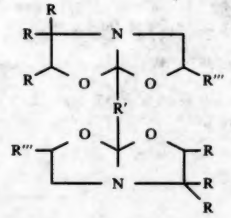
1. The process for preparing phosphorous derivatives of bicyclic amide acetals comprising reacting a bicyclic amide acetal conforming to the Formula I, II, or III



I

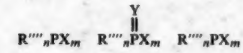


II



III

wherein R independently represents hydrogen or an alkyl group having from 1 to 18 carbon atoms, R′ represents an alkylene group having from 1 to 18 carbon atoms, a cycloalkylene group having from 6 to 18 carbon atoms or an arylene group having from 6 to 12 carbon atoms or an ether having from 2 to 18 carbon atoms, R″ represents hydrogen, an alkyl group having from 1 to 18 carbon atoms or an alkaryl or aryl group having from 6 to 18 carbon atoms, and R‴ represents hydrogen or an alkyl group having from 1 to 18 carbon atoms or an aryl or alkaryl group having from 6 to 18 carbon atoms or an ether group having from 1 to 18 carbon atoms with a phosphorous compound conforming to Formula IV, V or VI.



IV V VI

wherein the phosphorous is trivalent in Formula IV, R⁗ represents hydrogen or a hydrocarbon, an oxyhydrocarbon or ester group having 1 or more carbon atoms, X represents a halogen, an hydroxyl group or a thiol group, n represents a number from 0 to 2, m represents a number from 1 to 3 and the sum of n+m is 3; in Formula V phosphorous is pentavalent, R⁗ has the foregoing designation, Y represents oxygen, sulfur or NH and n and m have the same designations as in Formula III; in Formula VI phosphorous is pentavalent, R⁗ and X have the foregoing designations, n is a number from 0 to 4, m is a number from 1 to 5 and the sum of n+m is 5.

14. The composition produced by the process of claim **1**.

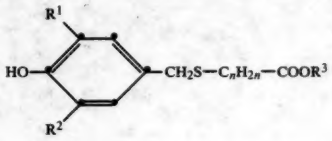
4,623,745

PROCESS FOR PRODUCING PHENOLIC THIOCARBOXYLIC ESTERS

Siegfried Rosenberger, Riehen, and Werner Stegmann, Liestal, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

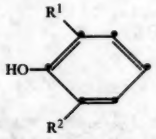
Filed Jul. 16, 1985, Ser. No. 755,383
Claims priority, application Switzerland, Jul. 25, 1984, 3599/84
Int. Cl.[4] C07C 149/40
U.S. Cl. 560—15 **8 Claims**

1. A process for producing a compound of the formula I



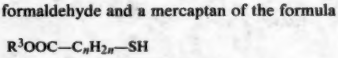
(I)

wherein R^1 and R^2 independently of one another are each tert-butyl, R^3 is C_1–C_{20}-alkyl interrupted by —O— or —S—, and n is the number 1 or 2, by reaction of a phenol of the formula II



(II)

with formaldehyde and a mercaptan of the formula III



(III),

wherein R^1, R^2, R^3 and n have the meanings defined above, at a temperature of between 20° and 200° C. and in the presence of a catalyst, in which process the catalyst used is a primary or secondary amine of the formula IV

(IV)

in which R^4 and R^5 independently of one another are each C_2–C_{20}-alkyl or hydroxyalkyl, C_5–C_7-cycloalkyl, phenyl or benzyl, and R^5 can additionally be hydrogen.

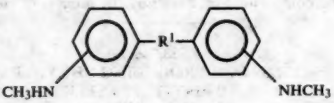
4,623,746

ALKYLENEGLYCOL-BIS(4-METHYLAMINOBENZOATES)

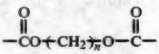
Dalip K. Kohli, Norwalk, Conn., assignor to American Cyanamid Company, Wayne, N.J.

Filed Aug. 1, 1983, Ser. No. 518,863
Int. Cl.[4] C07C *101/00*
U.S. Cl. 560—50 **3 Claims**

1. A compound of the formula:



wherein the CH_3NH— groups are in the 4 and 4' positions and R^1 is



and n is an integer of from 2 to 12.

4,623,747

TERPENE DIESTERS AND PROCESS FOR PREPARING THE SAME

Kathryn S. Hayes, Norristown, Pa., and Jerome R. Olechowski, Lawrenceville, N.J., assignors to Union Camp Corporation, Wayne, N.J.

Filed May 13, 1985, Ser. No. 733,256
Int. Cl.[4] C07C *67/313, 69/602*
U.S. Cl. 560—190 **14 Claims**

1. The dimethylester of a C_{22} diacid obtained from the double bond addition of two carbomethoxyhexyl radicals to an unsaturated terpene.

3. The dimethylester of claim **1** selected from the group consisting of dimethyl 8-(4-methyl-3-pentenyl)-8-hexadecene-1, 16-dioate, dimethyl 7-(2-methyl-1-propenyl)-9-10-dimethyl-8-hexadecene-1, 10-dioate and dimethyl 7-(3methyl-2-butenyl)-8-methyl-8-hexadecene-1, 16-dioate.

4,623,748

DIALKYL ADIPATE LUBRICANTS PREPARATION USING TANTALUM (V) HALIDE/OXIDE-INORGANIC OXIDE CATALYSTS

Thomas H. Johnson, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Feb. 25, 1985, Ser. No. 704,984
Int. Cl.[4] C07C *67/08*
U.S. Cl. 560—204 **4 Claims**

1. An process for the production of dialkyl adipate lubricant compositions which process comprises:

(a) contacting at least a portion the reaction product of the liquid phase oligomerization of propylene and/or butylene containing a C_8 olefin component, a C_9 olefin component and/or a C_{12} olefin component, which reaction product was formed by reacting propylene and/or butylene in the presence of a catalyst formed by reacting a nickel compound with a hydrocarbyl aluminum halide, with a reforming catalyst comprising pentavalent tantalum, halogen, oxygen and an inorganic oxide substrate wherein at least one valence of tantalum is bound to oxygen which is bound to the substrate, at least one valence of the tantalum is bound to halogen and the remaining tantalum valences are bound to halogen and/or oxygem which may or may not be bound to the substrate, said contact taking place at a temperature ranging from about 25° C. to about 300° C.,

(b) separating from the reaction mixture of (a) into a desired C_8 olefin component, a C_9 olefin component and/or a C_{12} olefin component,

(c) hydroformylating the desired C_8 olefin component, the C_9 olefin component and/or the C_{12} olefin component to produce a desired C_9 alcohol component, a C_{10} alcohol component and/or a C_{13} alcohol component,

(d) reacting the desired C_9 alcohol component, the C_{10} alcohol component and/or the C_{13} alcohol component with adipic acid or a suitable derivative of adipic acid to produce the corresponding adipate, and

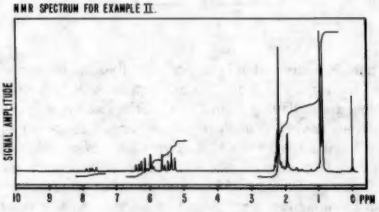
(e) separating the desired di-isononyl adipate, the di-decyl adipate and/or the di-tridecyl adipate from the reaction products of (d).

4,623,749

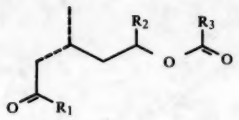
SYNTHESIS OF TRICONJUGATED DIENONES AND NOVEL INTERMEDIATES USED IN SAID PROCESS

William J. Evers, Locust; Gilbert Stork, Englewood; Braja D. Mookherjee, Holmdel, and Howard H. Heinsohn, Jr., Freehold, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 551,480, Nov. 14, 1983, Pat. No. 4,560,791, which is a division of Ser. No. 431,268, Sep. 30, 1982, Pat. No. 4,451,392. This application Aug. 17, 1984, Ser. No. 620,163
Int. Cl.[4] C07C *69/145, 69/157*
U.S. Cl. 560—262 **2 Claims**



1. A mixture of carbon-carbon double bond isomeric compounds defined according to the structure:



wherein in the mixture, in each of the compounds, one of the dashed lines is a carbon-carbon double bond and the other of the dashed lines is a carbon-carbon single bond; wherein R_1 is the same for each of said isomeric compounds and is C_1–C_8 alkyl, phenyl or phenyl methyl; wherein R_2 is the same for each of said isomeric compounds and is hydrogen or C_1–C_5 alkyl; and wherein R_3 is the same for each of said isomeric compounds and is C_1–C_5 alkyl.

4,623,750

COMPOSITION ESSENTIALLY CONSISTING OF TRANS-1-(2,6,6-TRIMETHYLCYCLOHEXYL)-HEXAN-3-OL

Karl-Heinrich Schulte-Elte, Onex; Günther Ohloff, Bernex; Bernard L. Müller, Geneva, and Wolfgang K. Giersch, Bernex, all of Switzerland, assignors to Firmenich SA, Geneva, Switzerland

Filed Feb. 28, 1984, Ser. No. 584,501

Claims priority, application Switzerland, Mar. 9, 1983, 1259/83

Int. Cl.[4] C07C *35/08*

U.S. Cl. 568—822 **4 Claims**

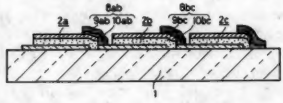
1. A composition containing from 50% to 100% of trans-1-(2,6,6-trimethylcyclohexyl)-hexan-3-ol and not more than 50% of cis-1-(2,6,6-trimethylcyclohexyl) hexan-3-ol.

4,623,751

PHOTOVOLTAIC DEVICE AND ITS MANUFACTURING METHOD

Yasuo Kishi; Hiroyuki Taniguchi; Souichi Sakai; Hitoshi Katoh, and Atsuo Mizukami, all of Osaka, Japan, assignors to Sanyo Electric Co., Ltd., Japan

Filed Jun. 6, 1984, Ser. No. 617,724
Int. Cl.[4] H01L *27/14, 31/18*
U.S. Cl. 136—244 4 Claims



3. A photovoltaic device of the type having a plurality of separate photoelectric converting regions formed on an insulating surface of a substrate, said photoelectric converting regions being electrically connected in series, comprising:

a plurality of spaced-apart first electrode layers containing oxygen in the form of an oxide disposed on said insulating surface of said substrate, each of said spaced-apart first electrode layers corresponding to one of said plurality of photoelectric converting regions;

a plurality of film-like photoelectric semiconductor layers including amorphous silicon disposed over said first spaced-apart electrode layers, respectively;

a second electrode layer disposed over and contacting each of said plurality of said film-like photoelectric semiconductor layers; and

a coupling electrode layer disposed between said first electrode layers and said second electrode layer of adjacent photoelectric converting regions for forming a series electrical connection therebetween, wherein said coupling electrode layer is comprised of (1) a substantially non-oxidizing metal layer selected from the group consisting of platinum, gold, silver, titanium, nickel, platinum alloys, gold alloys, silver alloys, titanium alloys and nickel alloys, and (2) an overlying layer of aluminum;

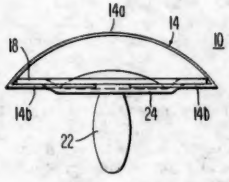
whereby said non-oxidizing metal layer prevents oxidation of said aluminum layer through contact with the oxygen included in said first electrode layer in the form of oxide.

4,623,752

DOUBLE-ACTION GASKET ASSEMBLY FOR EMI/RFI SHIELDING

Grant F. Steen, Bryn Athyn, Pa., and Michael Holloway, Maple Shade, N.J., assignors to Burroughs Corporation, Detroit, Mich.

Filed Dec. 24, 1984, Ser. No. 685,400
Int. Cl.[4] H05K *9/00*
U.S. Cl. 174—35 GC 7 Claims



1. An EMI/RFI shielding gasket assembly comprising:

an elongated, articulated structure formed of an electrically conductive material having spring-like properties, said structure having a plurality of segments, each of said segments having an arcuate section with opposed extremities, said extremities being bent toward each other, thereby forming a respective pair of spaced-apart coplanar sections, said segments having an axial space between each extremity and a portion of the arcuate section above the extremity,

a rigid, substantially planar carrier having opposing coplanar longitudinal sides, said carrier being substantially enclosed by said segments, and each longitudinal side being disposed adjacent a respective coplanar section, whereby said structure is retained upon said carrier in the presence of wiping compressive forces applies to the arcuate sections of said structure, and

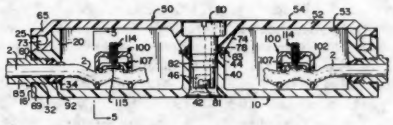
a plurality of spacing means for off-setting said longitudinal sides of said carrier from a mounting surface, whereby said pair of coplanar sections are capable of axial movement and contact with said mounting surface in response to said wiping compressive forces.

4,623,753

WATERTIGHT JUNCTION BOX

Steven Feldman, Seminole, and Marvin L. Yeager, Clearwater, both of Fla., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 31, 1983, Ser. No. 546,792
Int. Cl.[4] H05K *5/03*
U.S. Cl. 174—50 13 Claims



1. A rain tight enclosure which comprises:

a first closure member having a first circumferential channel opening in one direction, said first channel being defined by an inner wall, an outer wall, and a floor therebetween;

a second closure member having a second circumferential channel opening outward, said second channel being defined by a first flange, a bottom wall extending downwardly from said first flange, and a second flange, contiguous with said bottom wall, substantially parallel to said first flange, said second channel being profiled to be received in said first channel when said second closure member is placed over said first closure member, the intersection of the first and second channels forming a peripherally extending duct about an interior of said enclosure.

4,623,754

ELEMENT INSTALLATION ARRANGEMENT FOR INSTALLING AN ELEMENT IN A FLYBACK TRANSFORMER

Akihiro Kikuchi, Nagaokakyo, and Tosimi Miyagi, Kusatsu, both of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Mar. 14, 1985, Ser. No. 711,993
Claims priority, application Japan, Mar. 15, 1984, 59-50384
Int. Cl.[4] H05K *7/02;* H01F *27/40*
U.S. Cl. 174—52 R 10 Claims

1. An element installation arrangement for installing an element of a type having an elongated body with two opposite ends and side portions between said ends, in a flyback transformer comprising: a bobbin;

a first holder mounted on said bobbin; and

a second holder mounted on said bobbin in a predetermined spaced relationship with said first holder;

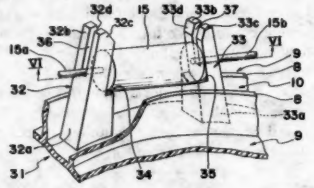
said first holder having a first surface facing said second holder and a first step formed between said first surface and said bobbin;

said second holder having a second surface facing said first

holder and a second step formed between said second surface and said bobbin;

said respective surface and step in each of said first and second holders defining an angle that is no greater than a right angle;

said first and second steps being formed between said first and second surfaces; and



said first and second holders being configured and dimensioned for such element being pressure fitted between said first and second surfaces with such side portions of such element adjacent the opposite ends of such element being seated on said first and second steps.

4,623,755

ELECTRICAL INSULATION

Hans-Joachim Henkel, and Norbert Müller, both of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 613,642, May 24, 1984, abandoned.
This application Sep. 13, 1985, Ser. No. 775,705
Claims priority, application Fed. Rep. of Germany, May 25, 1983, 3318988
Int. Cl.[4] H01B *7/00*
U.S. Cl. 174—110 SR **7 Claims**

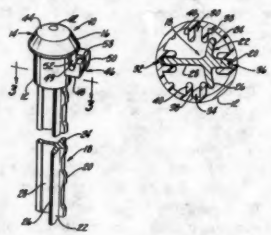
1. An insulated electrical conductor comprising an electrically conducting material in combination with an electrically insulating polyolefin composition containing in a homogeneous distribution 0.1 to 4 percent by weight, relative to the total weight of the composition, of an inorganic oxide additive selected from silica, aluminum oxide, aluminum oxide hydrate or aluminum silicate which is absorption-active for heavy metal ions or which binds heavy metal ions in an ion exchange, and which has a particle size of up to 50 microns or an agglomerate size of up to 100 microns, said additive acting upon said polyolefin composition to prevent the formation of water trees when said composition is dielectrically stressed by the presence of an electric field.

4,623,756

FENCE POST INSULATING CAP

Robert M. Wilson, Jr., Battle Creek, Mich., assignor to Dare Products, Inc., Battle Creek, Mich.

Filed Aug. 19, 1985, Ser. No. 766,716
Int. Cl.[4] H01B *17/14*; A01K *3/00*
U.S. Cl. 174—158 F **7 Claims**



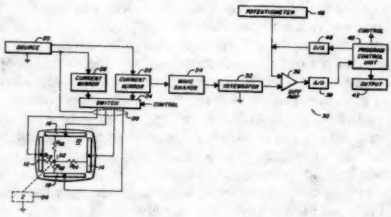
1. An electric fence insulator cap for installation on the top of a studded T-post, said cap being molded from a weatherproof electrically insulating, high impact plastic, comprising: a tubular body; a sloped top closing one end of said tubular body; four pairs of adjacent axially co-extending parallel ribs projecting inwardly from said tubular body and spaced to grip a T-post stud therebetween, said pairs of ribs being equally spaced at 90° around the inner circumferences of said body; wire retention means extending outwardly from said tubular body aligned with a pair of said ribs, whereby said wire retention means can be oriented in a selected one of four 90° spaced positions to receive a wire and the cap can be driven onto a studded T-post in such selected position by impacting said top, one of said pairs of ribs then gripping a stud of said studded T-post between ribs while the closer of the ribs in the two pairs of ribs at 90° to the stud-gripping ribs will then engage the flanges of said T-post for coaction with said stud-gripping pair of ribs or the pair of ribs opposing the stud-gripping ribs will receive the web of said T-post for coaction with said stud-gripping pair of ribs to accept said cap in wedging retention on said T-post.

4,623,757

METHOD AND APPARATUS FOR ELECTRONIC TOUCH MAPPING

Michael J. Marino, Lynn, Mass., assignor to Interaction Systems, Inc., Newton, Mass.

Filed Nov. 29, 1984, Ser. No. 676,185
Int. Cl.[4] G08C *21/00*
U.S. Cl. 178—18 **17 Claims**



1. In a method for mapping a touch to an unpatterned and selectively electrically conductive layer having a known conductivity property, wherein the mapping is relative to at least a first coordinate axis, the improvement comprising the steps of

A. measuring an electrical charge which said layer draws over a selected time duration from an electrical signal source in response to the touch,

B. applying at least one of a means for effecting said measurement and said source to said conductive layer at a first position relative to said coordinate, and

C. determining said mapping of the touch relative to said first position in response to said charge measurement.

4,623,758

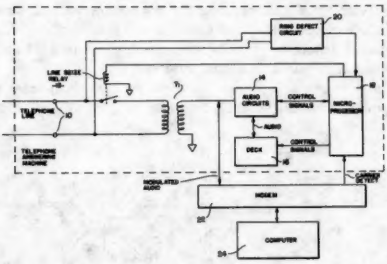
HYBRID SYSTEM FOR RECORDING VOICE AND DATA SIGNALS

Masroor A. Batla, Buena Park, and Bradford E. Hanscom, Downey, both of Calif., assignors to Fortel, Inc., Compton, Calif.

Filed Apr. 12, 1985, Ser. No. 722,349
Int. Cl.[4] H04M *11/00*, *1/65*
U.S. Cl. 379—80 **4 Claims**

1. In combination: first means adapted to be coupled to a telephone line for recording both voice and data signals received over the telephone line, said first means including control circuitry for limiting the recording of the voice signals to

a time interval determined by the actual reception of voice signals, and said data signals being received over the telephone line modulated on a carrier; and second means adapted to be coupled to the telephone line for detecting the data signal



carrier and connected to said first means to introduce a control signal to said first means to disable said control circuitry thereby to enable said first means to record the data signals for so long as data signals are received over the telephone line.

4,623,759

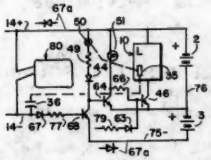
TELEPHONE LINE VOLTAGE ACTUATED SWITCH

Leonard M. Todd, 424 W. 119th St., New York, N.Y. 10027

Continuation-in-part of Ser. No. 754,829, Dec. 27, 1976, abandoned, which is a continuation-in-part of Ser. No. 401,062, Sep. 26, 1975, Pat. No. 4,017,686, which is a continuation-in-part of Ser. No. 250,068, May 3, 1972, Pat. No. 3,794,767. This application Feb. 5, 1979, Ser. No. 9,450

Int. Cl.[4] H04M *1/64*

U.S. Cl. 379—79 **1 Claim**



1. A voltage actuated switch for a telephone line having first and second conductors and high on-hook and low off-hook voltages comprising a transistor having a base, emitter and collector, a tape recorder having a motor and a recording head and a power source, said transistor going into conduction when a control voltage applied to said base with respect to said emitter is higher than a cut-off voltage, said transistor ceasing to conduct when a control voltage applied to said base with respect to said emitter is lower than said cut-off voltage, coupling means to connect audio voltage in said telephone line to said recording head, said motor, said collector, said emitter and said power source connected in a series circuit, second coupling means having an input and an output, said first and second conductors connected to said input of said second coupling means, said output of said second coupling means connected to said base and a point in said series circuit, said off-hook voltage appearing in said first and second conductors, a voltage thereupon appearing in said output of said second coupling means, said voltage resulting in a base-emitter voltage above cut-off, said transistor conducting, current flowing from said power source through said collector and said emitter and said motor, operating said recorder, said audio voltage coupled to said recording head and being recorded by said recorder; said on-hook voltage appearing in said first and second conductors, a voltage thereupon appearing in said output of said second coupling means, said voltage resulting in a base-emitter voltage below cut-off, said transistor ceasing to conduct, said motor and said tape recorder ceasing to operate.

4,623,760

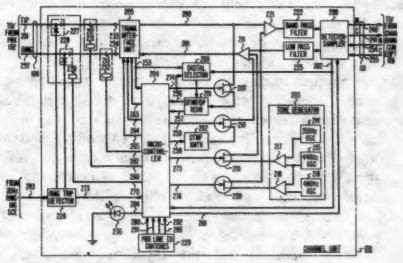
SIGNALING PROTOCOL INTERFACE CHANNEL UNIT

Mark S. Binkerd, Warrenville, and William C. Sand, St. Charles, both of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 28, 1983, Ser. No. 546,336

Int. Cl.[4] H04J *3/22*; **H04M** *7/10*

U.S. Cl. 379—232 **32 Claims**



31. A multiprotocol interface unit for first and second communications channels and comprising:

control means responsive to a first set of electrical signals in a first signaling protocol representative of a first communications state on said first channel and to a second communications state on said first channel occurring previous to said first state for generating a first control signal, and

means responsive to said control signal when generated for producing on said second channel a second set of electrical signals in a second and different signaling protocol than said first protocol and representing a communications state on said second channel correlated to said first communications state on said first channel.

4,623,761

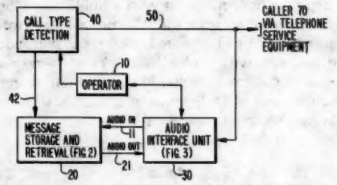
TELEPHONE OPERATOR VOICE STORAGE AND RETRIEVAL SYSTEM

Walter W. Winter, Melbourne; Steven E. Gothard, Palm Bay, and John H. Drew, Indialantic, all of Fla., assignors to Golden Enterprises, Incorporated, Melbourne, Fla.

Filed Apr. 18, 1984, Ser. No. 601,711

Int. Cl.[4] H04M *3/50*

U.S. Cl. 379—84 **38 Claims**



13. For use with an operator-assisted telephone service facility in which on-line participation by an on-line operator is required for effectively enabling an incoming caller to reach a called destination, a method of supplying a response message to said incoming caller accessing said facility comprising the steps of:

(a) storing a plurality of prescribed response messages, each of which, when played back, effectively corresponds to

the voice of the operator who is on-line with and services incoming calls; and

(b) in conjunction with the on-line operator's servicing of an incoming call, selectively accessing a response message from among said plurality of stored response messages in dependence upon information contained within said incoming call being serviced by said on-line operator and which is representative of the type of the call to which said incoming call corresponds, and causing said selectively accessed response message to be played back to said incoming caller.

33. For use with an operator-assisted telephone service facility, a method of supplying response messages to an incoming caller accessing said facility comprising the steps of:

(a) storing at least one response message to be played back to said incoming caller;

(b) in conjunnction with the servicing of an incoming call, accessing said at least one response message and causing said response message to be played back to said incoming caller, while enabling said operator to monitor said incoming call and the response message palyed back in response thereto and also having the capability of effecting a voice communication with said incoming caller; and

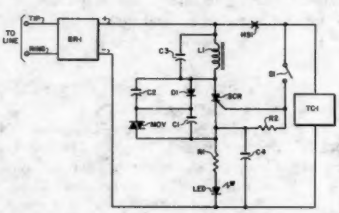
(c) adjusting, in effectively the same manner, at least one prescribed characteristic of each of said voice message from said operator and said played back message.

4,623,762

STATIC DISCHARGE SNUBBER CIRCUIT FOR SILICON CONTROLLED RECTIFIER (SCR) TYPE TELEPHONE HOLD DEVICES

Eduard F. B. Boeckmann, Huntsville, and Miranda L. James, Hartselle, both of Ala., assignors to GTE Communication Systems Corporation, Northlake, Ill.

Filed Dec. 10, 1984, Ser. No. 680,035
Int. Cl.[4] H04M *1/00*
U.S. Cl. 379—393 **11 Claims**



1. A static discharge snubber circuit, a telephone connected to a telephone line, equipped with a hold circuit employing a silicon controlled rectifier (SCR), said snubber circuit including: an inductor of the ferrite toroid type, said inductor connected to series with said SCR, operated in response to the application of a static discharge pulse to said telephone or in the alternative to said telephone line, to resist the instantaneous flow of said pulse into said hold circuit.

4,623,763

ROTARY MULTI-CONTACT SWITCH

W. Barry Krause, Spotsylvania, Va., assignor to Oslo Controls, Inc., Cheshire, Conn.

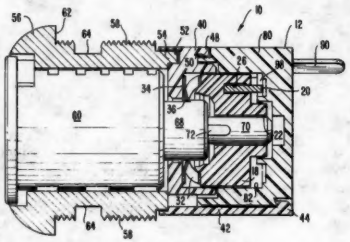
Filed Aug. 6, 1985, Ser. No. 762,782
Int. Cl.[4] H01H *1/16, 19/54, 21/76*
U.S. Cl. 200—11 K **12 Claims**

1. A rotary switch comprising:

a terminal housing having an exterior wall defining a generally cylindrical cavity interiorly of said wall and a series of openings formed in said wall opening into said cavity circumferentially spaced relative to said cavity, said openings extending generally parallel to the axis of said cavity;

a plurality of terminals carried by said housing, each said terminal having a terminal portion extending through one of said openings with the terminal portion end exposed exteriorly of said housing for connection of said switch into a circuit to be controlled and a contact portion disposed generally parallel with the bottom of said cavity normal to said axis of said cavity;

a carrier rotatable within said cavity having at least one pocket formed therein facing said bottom of said cavity;



contactor means loosely received within said pocket to be freely movable therewithin;

a base having connecting means cooperable with said housing to connect said base and said housing together, thereby enclosing said carrier within said cavity;

spring means disposed to urge said contactor means toward said contact portions; and

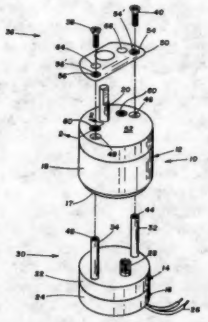
actuator means extending from the exterior of said switch through said base and drivingly engaged with said carrier to effect rotation of said contactor means relative to each of said contact portions and thereby operate said switch.

4,623,764

MEANS ELECTRICALLY GROUNDING A MOTOR

Mark L. Petre, Pittsboro, and Michael W. Lock, Greenwood, both of Ind., assignors to Emhart Industries, Inc., Indianapolis, Ind.

Filed Jun. 17, 1985, Ser. No. 745,493
Int. Cl.[4] H01H *9/02, 43/00*
U.S. Cl. 200—38 R **2 Claims**



1. A timing mechanism assembly comprising a timer carried in a plastic housing, a gear train carried in a first metal housing in line with and carried by said plastic housing at an end thereof, a motor carried in a second metal housing that is carried by and in line with said first metal housing, and electrically conductive fastening means extending through said platic

housing and connecting same to said first metal housing, and an electrical ground means for said motor comprising:

a metal strap carried by said plastic housing on an outer surface thereof at an end opposite said end carrying said first metal housing and at least one tab extending from said metal strap and engaging said electrically conductive fastening means, and

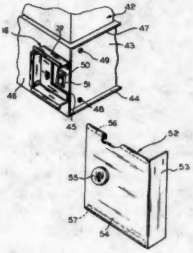
at least one metal receptacle provided in said plastic housing, said receptacle swaged to said metal strap at its open end to insure a good electrical connection between said metal receptacle and said metal strap.

4,623,765

COMPUTER POWER SWITCH LOCKOUT APPARATUS

Roger J. Leyden, Willow Springs, Ill., assignor to Se-Kure Controls, Inc., Chicago, Ill.

Filed Sep. 21, 1984, Ser. No. 653,434
Int. Cl.[4] F05B *17/18*
U.S. Cl. 200—43.22 **13 Claims**



1. A universal computer power switch lockout apparatus for restrained affixation upon the exterior surface of a computer's cabinetry at a location adjacent to said computer's power switch assembly field to preclude access, as desired, to said computer's power switch, circuit boards and expansion modules to, in turn, prevent unauthorized operation of the computer, said computer power switch lockout apparatus comprising:

mounting bracket means for mounting said lockout apparatus to said computer, said mounting bracket means being capable of restrained affixation to said computer cabinetry adjacent to said power switch assembly field,

said mounting bracket means including one or more mounting plate means,

each of said one or more mounting plate means having one or more side flange members emanating outwardly therefrom,

mounting bracket attachment means operably attached to each of said one or more mounting plate means for said restrained affixation of said mounting plate means to said computer cabinetry at said location immediately adjacent to said switch assembly field without penetration of said cabinetry for attachment thereof;

switch enclosure means for lockably and removably covering the entire switch assembly field and said mounting bracket means,

said switch enclosure means including enclosure plate means and one or more enclosure attachment members operably emanating inwardly from said enclosure plate means,

each of said enclosure attachment members cooperating with each of said one or more mounting plate flange members respectively to permit the restrained telescopic receipt of said switch enclosure means by said mounting bracket means alternatively in a covered position, in which said power switch assembly field, said power switch, said mounting bracket means, said circuit boards and said expansion modules are covered and inaccessible, and in an open position in which said mounting bracket means, said power switch assembly field, said power switch, said circuit boards and said expansion modules are accessible, to alternatively preclude and provide access to same, as desired,

position locking means operably positioned in one or both of said switch enclosure means and said mounting bracket means, for maintaining said enclosure means in said covered position to provide locking closure and, in turn, preclude access to said switch and mounting bracket, as desired,

said switch enclosure means further including anti-tamper barrier means to further preclude attempts at unauthorized removal of said switch enclosure means, operation of said power switch when said switch enclosure is located in said affixed, covering lockout position, and access to circuit boards and expansion modules at the rear,

said anti-tamper barrier means comprising first barrier plate means for enclosing and covering said circuit boards and expansion modules at the rear of said computer cabinetry,

said first barrier plate means extending inwardly from the rearmost edge of said enclosure plate means towards and past the rearmost portion of said mounting plate means to further preclude access to said power switch assembly field, as well as to cover at least a portion of the rear of said computer cabinetry substantially transverse to said exterior surface and any adjacent cabinet attachment fastening devices positioned therewithin, and

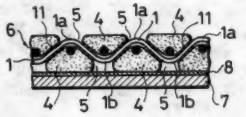
said first barrier plate means precluding access to said adjacent cabinet attachment fasteners to preclude the unauthorized removal of the rear portion of the computer cabinet from its adjacent cabinet surfaces, while maintaining said circuit boards and expansion modules inaccessible when said switch enclosure means is in alternative covered position, and alternatively providing access to said power switch when said switch enclosure means is in said alternative open position without the need to alternatively remove, reposition and displace said mounting bracket means.

4,623,766

PRESSURE-SENSITIVE SHEET MATERIAL

Ikuo Utagawa, Miyagi, and Kazuhiko Ito, Furukawa, both of Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Feb. 6, 1985, Ser. No. 698,563
Claims priority, application Japan, Jul. 1, 1983, 58-102266
Int. Cl.[4] H01H *35/00*
U.S. Cl. 200—85 R **4 Claims**



1. A pressure sensitive sheet construction for a switch comprising:

a corrugated net of electrically conductive wires formed with a plurality of corrugated portions on each side thereof, the wires being covered with an electrically insulating film except at said corrugated portions where the film is removed so that the wires are outwardly exposed; and

an electrically insulating compressible material in which the corrugated net is embedded except at said corrugated portions where the wires of said net are outwardly exposed between surrounding portions of said material.

4,623,767

DISCONNECT SWITCH FOR METAL-CLAD, PRESSURIZED GAS-INSULATED HIGH-VOLTAGE SWITCHGEAR WITH DAMPING RESISTORS

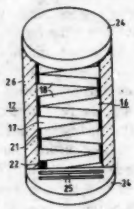
Winfried Schulz, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich and Berlin, Fed. Rep. of Germany

Filed Feb. 11, 1985, Ser. No. 700,540

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1984, 3405850

Int. Cl.[4] H01H *33/16*

U.S. Cl. 200—144 AP **12 Claims**



1. A disconnect switch for metal-enclosed, pressurized gas-insulated high-voltage switchgear having two field electrodes disposed on opposite sides of the disconnect gap; moveable cylindrical contact electrode slidably disposed within and in electrical contact with one of the field electrodes; a moveable insulating tube arranged with one other field electrode substantially bridging the disconnect gap between the field electrodes during a switching action; two moveable rods, each being electrically connected to a different field electrode, moving inside the insulating tube during switching actions; and two moveable resistors of approximately the same size, located along the longitudinal axis of and each electrically connectable respectively to one of the moveable rods, said moveable resistors having a thermally highly-conductive ceramic carrier and have outer dimensions smaller than the inner diameter of the insulating tube, and are inserted into the disconnect gap at the outset of the switching action, bridging the gap before the contact electrode bridges the disconnect gap between the field electrodes, characterized by each of the two moveable resistors comprising: at least one element located between a top and bottom metallic contact plate at each end thereof, and each said element including a ceramic plate bearing baked-on strips of resistance material which are terminated at the top and bottom edges of said ceramic plate; each edge facing and electrically contacting one of said top and bottom metallic plates, and by each of the two moveable resistors being molded together with hardened cast resin such that said contact plates can be electrically contacted from an outer surface.

4,623,768

FOLDABLE MEMBRANE SWITCH WITH FOLD REMOTE FROM CONTACT-CARRYING PANELS

Russell S. Gnant, Brookfield, Wis., assignor to W. H. Brady Co., Milwaukee, Wis.

Filed Jul. 29, 1985, Ser. No. 759,712

Int. Cl.[4] H01H *9/00*

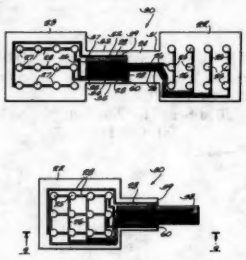
U.S. Cl. 200—159 B **5 Claims**

1. In a blank of plastic film for folding into a membrane switch, the blank including (a) a first contact-carrying panel having at least one contact zone on a surface thereof, and (b) a second contact-carrying panel having at least one contact zone on a surface thereof, the improvement comprising:

(1) an intermediate third panel positioned between the first contact-carrying panel and the second contact-carrying panel, the intermediate third panel being joined to both the first and second contact-carrying panels;

(2) a conductive track for each contact zone on the first contact-carrying panel, and a conductive track for each contact zone on the second contact-carrying panel extending along the second contact-carrying panel, each conductive track on said first and second contact-carrying panels also extending along the intermediate third panel;

(3) the blank being foldable along the intermediate third panel to position the surface of the first contact-carrying panel having a contact zone facing the surface of the second contact-carrying panel having a contact zone, with a contact zone on one contact-carrying panel aligned



with a contact zone on the other contact-carrying panel to provide an individual switch site; and

(4) the intermediate third panel further includes slits defining a tail panel for connecting a membrane switch folded from the blank to external electrical circuitry as a portion of the third panel, said tail panel portion being separable from the balanace of the intermediate third panel along said slits upon folding of the third panel, and the conductive tracks on both the first and second contact-carrying panels extend along the intermediate third panel and said tail panel portion thereof.

4,623,769

CONTINUOUS-CURRENT SWITCH FOR SHORTING AT LEAST ONE SUPERCONDUCTING MAGNET WINDING

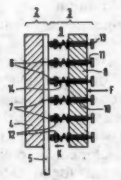
Holger Franksen, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Oct. 19, 1983, Ser. No. 543,253

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1982, 3240019

Int. Cl.[4] H01H *1/30, 1/50*

U.S. Cl. 200—250 **9 Claims**



1. A superconducting persistent-current switch for shorting the ends of at least one superconducting magnet winding, the switch having at least first and second contacts and comprising:

first and second support elements firmly affixed to respective ones of the first and second contacts;

a plurality of at least five superconducting conductor sections associated with the first and second support elements and arranged parallel to one another and cooled by a cryogenic coolant, the superconducting conductor sections being arranged on mutually facing surfaces of said support elements in substantially parallel planes in such a

manner that the conductor sections of one of the contacts cross the conductor sections of the other contact, forming a plurality of crosspoints between the superconducting conductor sections of the first contact and the superconducting conductor sections of the second contact;

affixing means associated with said plurality of superconducting conductor sections of the first contact for affixing the first support element to said associated plurality of superconducting conductor sections;

resilient support means interposed between said plurality of superconducting conductor sections associated with the second contact and said associated second support element for resiliently coupling said second support element to said associated plurality of superconducting conductor sections; and

actuating means for moving the contacts together with a predetermined contact pressure provided to the crosspoints.

4,623,770

METHOD OF IMPARTING CREASE TO POLYESTER FIBER GOODS

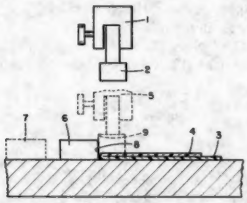
Masuji Kojima, Ohtsu, Japan, assignor to Toray Industries, Inc., Tokyo, Japan

Filed Aug. 20, 1984, Ser. No. 642,424

Claims priority, application Japan, Aug. 24, 1983, 58-153025; Mar. 15, 1984, 59-48130; Mar. 15, 1984, 59-36075[U]

Int. Cl.[4] H05B *6/62*

U.S. Cl. 219—10.41 **4 Claims**



1. A method of imparting a crease to polyester fiber goods which comprises: folding a portion of the polyester fiber goods to be creased; placing the folded portion of the polyester fiber goods between an upper electrode and a lower electrode of a high frequency electric welding machine; pressing the folded portion to be creased of the polyester fiber goods with a press bar attached to said upper electrode of said high frequency electric welding machine so that 40% to 90% in the width direction of the lower surface of the press bar is in contact with the polyester fiber goods including the folded portion to be creased; and energizing said high frequency electric welding machine at a frequency in the order of megahertz and under conditions effective to impart a crease to said fiber goods.

4,623,771

HIGH-VOLTAGE TRANSFORMER COOLING ASSEMBLY OF MICROWAVE OVEN

Tadashi Sakino, Yao, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 9, 1985, Ser. No. 732,285

Claims priority, application Japan, Jun. 19, 1984, 59-92711[U]

Int. Cl.[4] H05B *6/64*

U.S. Cl. 219—10.55 R **3 Claims**

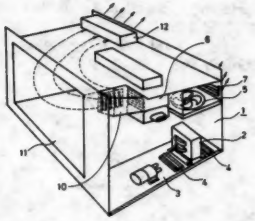
1. A cooling system for a microwave oven having a bottom wall, a top wall and side walls which comprises:

a transformer positioned on the bottom wall;

at least one air intake port provided in the bottom wall adjacent said transformer for receiving air from the atomsphere to cool said transformer;

a magnetron operatively mounted within said oven above said transformer;

an exhaust outlet provided on one of said walls adjacent said magnetron and aligned parallel to said magnetron; and



a blower means disposed between said magnetron and said exhaust outlet for directing a portion of the air entering said air intake port through said exhaust outlet and directing the remaining portion of the air entering said air intake port across said magnetron to cool said magnetron.

4,623,772

APPARATUS AND METHOD FOR EDM POLISHING

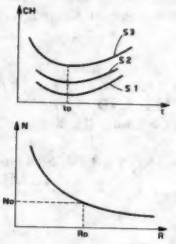
Philippe Fery, Plan-les-Ouates, and Roger Delpretti, Vernier, both of Switzerland, assignors to Charmilles Technologies S.A., Geneva, Switzerland

Filed Jul. 16, 1984, Ser. No. 631,447

Claims priority, application Switzerland, Dec. 16, 1983, 6722/83

Int. Cl.[4] B23H *1/02, 7/28*

U.S. Cl. 219—69 M **2 Claims**



2. A method for polishing by electrical discharges an electrode workpiece having a surface of predetermined dimensions by means of an electrode tool of predetermined dimensions, wherein the electrode workpiece and the electrode tool are displaced relative to each other according to a cyclical translation motion of a predetermined amplitude and tangential velocity while applying across the electrodes consecutive electrical discharges of predetermined power, the amplitude of the translation motion being chosen as a function of the dimensions of the electrode tool relative to the dimensions of the surface of the electrode workpiece to be polished, said method comprising effecting said cyclical translation motion between said electrodes, presetting the amplitude and the tangential velocity of the translation motion at predetermined values, applying electrical discharges of predetermined power between said electrodes, calculating the number of cycles of translation motion to be effected as an inverse function of the amplitude of said translation motion, counting the number of cycles of translation motion effected while applying said electrical discharges, and interrupting said electrical discharges when the calculated number of cycles of translation motion and the number of effected cycles of translation motion are equal.

4,623,773

ELECTROSPARK MACHINING SOLUTION

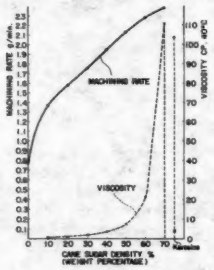
Masahiro Onizuka, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 227,903, Jan. 23, 1981, abandoned. This application Mar. 19, 1984, Ser. No. 590,602

Claims priority, application Japan, Jan. 29, 1980, 55-9095; Aug. 29, 1980, 55-119226

Int. Cl.[4] B23P *1/08*

U.S. Cl. 219—69 D 40 Claims



1. An electrospark machining device comprising an electrospark machining electrode positioned in a non-flammable electrospark machining solution consisting essentially of an aqueous solution of saccharide, said machining solution having an electrical insulating characteristic high enough to cause spark discharge, and power means to produce a spark discharge (high power density arcs) in a gap between said electrode and an electrically conductive work piece, whereby spark discharges from said electrode are produced in a gap between said electrode and said work piece to machine said work piece when said device is used for electrospark machining.

4,623,774

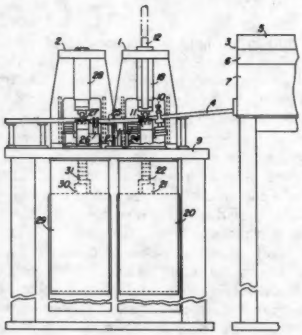
METHOD AND APPARATUS FOR THE WELDING OF A BALL AND ROD ASSEMBLY

Ronald N. Ford, Lockport, Ill., assignor to Sciaky Bros., Inc., Chicago, Ill.

Filed Dec. 17, 1984, Ser. No. 682,251

Int. Cl.[4] B23K *11/32*

U.S. Cl. 219—78.13 6 Claims



1. An automatic piston rod fabricating machine for producing piston connecting rod assemblies from metal rods and balls comprising:

means for temporarily storing batches of rods and balls;

means for feeding the said rods from said storage means to an inspection device which is arranged to reject rods whose dimensions are not within given tolerances;

a resistance welding machine including clamps for holding rods to which balls are to be welded and means for actuating said clamps;

shuttle means for feeding rods sequentially into said clamps;

means for feeding balls from the ball storage means to a position on the resistance welding machine which will allow a ball to be automatically placed at each end of a rod held by said clamps;

means for applying a force between the last mentioned balls and rod;

means for passing electric current through the said balls and rod so as to form an assembly of a rod with a ball welded at each end;

means operative after said welding operation for releasing the welded ball and rod assembly from the clamps and conveying said assembly to an annealing means;

means for feeding the said assembly into a clamp associated with the said annealing means;

means for generating a high electric current and passing said current through the said assembly;

means associated with said annealing means for forging and sizing the assembly to preset tolerances; and

means for removing the assembly from the annealing means to an exit conveyor.

4,623,775

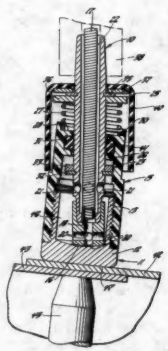
ARTICULATED RESISTANCE WELDING ELECTRODE WITH UNIVERSAL MOVEMENT

Kevin M. Lange, Auburn Heights, Mich., assignor to General Motors Corp., Detroit, Mich.

Filed Nov. 15, 1985, Ser. No. 798,443

Int. Cl.[4] B23K *9/24, 11/30;* H05B *3/03*

U.S. Cl. 219—120 3 Claims



1. A resistance welding electrode for producing spot welds on a workpiece comprising:

a hollow electrically conductive shank for conducting welding current and pressurized cooling fluid, the shank having a free end and including a pair of axially spaced flanges extending radially outwardly therefrom and fluid circulating ports between the free end and the flange adjacent the free end;

an electrode head located adjacent the free end of the shank, the head having a workpiece contact area;

a rigid, electrically insulating, tubular housing affixed to the head and surrounding a portion of the shank, the tubular housing including a flange extending radially inward between the flanges of the shank and adapted to engage the flange of the shank nearest the free end thereof, the flange of the tubular housing having a groove facing the shank;

a spring engaging the other flange of the shank and the tubular housing, the spring being effective to bias the

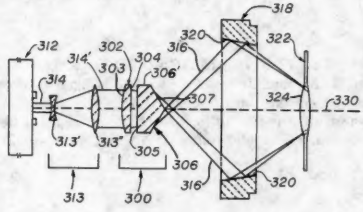
flange of the tubular housing into engagement with the flange of the shank nearest the free end thereof; and a ring of resilient, fluid sealing material retained in the groove and adapted to engage the shank and thereby form a chamber with the tubular housing and head communicating with the fluid circulating ports of the shank to receive pressurized cooling fluid, the ring further acting as a pivot member to allow rocking movement of the tubular housing and head about an axis perpendicular to the shank so that the workpiece contact area may conform to the workpiece when welding pressure is applied to the shank, the ring further allowing axial translation between the tubular housing and shank under welding pressure to permit contact between the head and shank for welding current flow therebetween and also allowing axial separation of the head and shank due to fluid pressure and the force of the spring when the welding pressure is removed.

4,623,776

RING OF LIGHT LASER OPTICS SYSTEM

Richard A. Buchroeder; Eric M. Palmer, both of Tucson, and Yefim P. Sukhman, Phoenix, all of Ariz., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jan. 3, 1985, Ser. No. 688,664
Int. Cl.[4] B23K *26/00*
U.S. Cl. 219—121 LG **7 Claims**



1. A laser optics system for generating a ring-shaped beam of electromagnetic radiation for use in contouring and severing a lens-shaped article article having a curved surface from a workpiece, said system consisting essentially of

A. a focussing element for receiving a circular beam of electromagnetic radiation from an appropriate laser source and transforming said beam into a ring-shaped beam of electromagnetic radiation, said element having two opposed surfaces wherein one of said surfaces is a convex lens surface and the opposite surface is a conical surface which forms an axicon, said element being situated in the path of and concentric with the central long axis of said circular beam such that the circular beam enters the convex surface and the ring-shaped beam concentric with said circular beam emerging from the axicon surface is received by

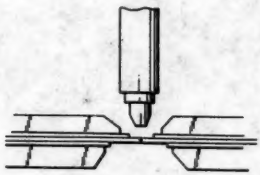
B. a reflective element having a conical reflective surface situated at such an angle and situated in such a position relative to the central long axis of said ring-shaped beam to cause a ring-shaped beam of a preselected diameter to impinge upon a curved workpiece surface located beyond the focussing element and reflective element at a preselected angle with respect to the curved surface of the workpiece.

4,623,777

APPARATUS FOR BUTT WELDING STEEL STRIPS BY USING A LASER BEAM IN A STEEL STRIP-PROCESSING LINE

Masaki Aihara; Noboru Tsuruta; Yoshito Kawai, and Hiroaki Sasaki, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Feb. 27, 1984, Ser. No. 584,125
Claims priority, application Japan, Feb. 28, 1983, 58-28664[U]
Int. Cl.[4] B23K *26/00*
U.S. Cl. 219—121 L **16 Claims**



1. A laser butt welding apparatus comprising an inlet clamp means and an outlet clamp means, at least one of which is movable forward and rearward along a steel strip-feed line direction, and which are adapted to clamp the edge portions of a preceding steep strip and a trailing steel strip, each of said inlet and outlet clamp means having an upper clamp beam and a lower clamp beam, the upper clamp beams of said inlet and outlet clamp means extending nearer to each other than the lower clamp beams of said inlet and outlet clamp means, shearing means consisting of a preceding steel strip shear and a trailing steel strip shear each having a lower shearing blade and an upper shearing blade which are independently movable upward and downward, said shearing means being advanceable and retractable between said inlet and outlet clamp means in a perpendicular direction to the line and adapted to cut the edge portions of the preceding and trailing steel strips by lowering the upper shearing blades while in said shearing, the edge portions of the preceding and trailing steel strips being firmly sandwiched between the lower shearing blades and the upper clamp beams, means for butting the cut edge portions of the preceding and trailing steel strips while being clamped by means of said clamp means, means for continuously feeding a filler wire at a weld zone at which a laser beam is condensed, laser torch means comprising a laser oscillator placed on an off-line, a bender mirror adapted to bend a laser beam irradiated from said laser oscillator, a condenser adapted to condense the laser beam reflected by the bender mirror at a weld zone, and a torch member for applying the laser beam focused by said condenser, which torch member is movable in a width direction of steel strips to be joined, and a center clamp arranged at the opposite side to the laser torch member, and adapted to clamp the butted edge portions of the preceding and trailing steel strips in cooperation with the upper clamp beams when welding is started, so as to avoid the deformation of the steel strips tip portions, the butting means being provided with means for setting a gap, between the butted cut edge portions of the preceding and trailing steel strips, at a distance smaller than the diameter of the filler wire.

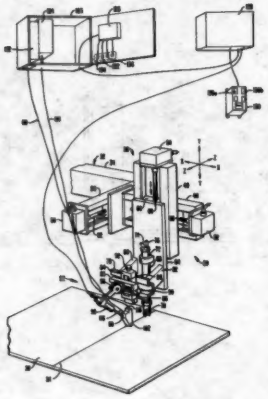
4,623,778

OPTICAL TRACKER CONTROL SYSTEM

Richard A. Cullen, and Thomas S. Thorvick, both of San Diego, Calif., assignors to Cyclomatic Industries, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 486,534, Apr. 19, 1983, abandoned. This application Apr. 6, 1984, Ser. No. 597,612
Int. Cl.[4] B23K 9/12
U.S. Cl. 219—124.34 66 Claims

MICROFICHE APPENDIX INCLUDED
(2 Microfiche, 79 Pages)



24. An apparatus for tracking a boundary on a surface at which work is to be performed by means of an instrument, wherein the boundary and the portion of the surface adjacent to the boundary are illuminated, and wherein the reflectivity of the surface changes at the boundary, said apparatus comprising:

a housing adapted to be coupled to the instrument;

means connected to the housing for sensing the light reflected from an elongated portion of the surface underneath the housing defining a window so that when the housing is moved across the surface, said sensing means will sense light from a sequence of windows passed over by the housing, said sensing means comprising a substantially linear array of n substantially evenly spaced photosensors, each generating an output electrical signal substantially proportional to the intensity of light sensed by such photosensor, and wherein each photosensor corresponds to a section in a linear array of n substantially identical sections forming the window;

means for scanning the output of each photosensor m times per scanning interval to produce m arrays of n pixel values representing the intensities of light reflected from the array of n sections, where n and m are positive integers; and

processing and control means for deriving, for each scanning interval and from the corresponding m arrays of n pixel values, a set of signals indicative of the characteristics of the surface, said processing and control means records, as a template set of signals, a set of signals derived from the m arrays of n pixel values scanned during the scanning interval when the window includes and intersects a selected portion of the boundary, wherein said processing and control means compares the template set of signals to sets of signals derived from pixel values obtained during other scanning intervals and generates a control signal to indicate whether the window intersects the boundary during such other intervals, and

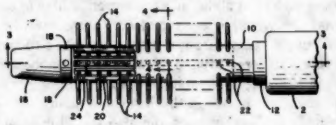
means for moving said sensing means over the boundary in response to the control signal to track the boundary.

4,623,779

ELECTRICALLY HEATED BRUSH INCLUDING A HEAT DISTRIBUTION BARREL STRUCTURE

John J. Raab, Lakewood, N.J., assignor to Conair Corporation, Edison, N.J.

Filed Jan. 20, 1984, Ser. No. 572,460
Int. Cl.[4] A45D 1/04
U.S. Cl. 219—222 8 Claims



1. An electrically heated brush for treating hair without presenting excessive heat to the skin or hair, said brush including

a handle,

a longitudinally extending outer sleeve secured to said handle at one end of said sleeve, said sleeve having a plurality of axially-aligned rows of tooth-receiving holes,

a tooth bar for each said row, each said bar including a longitudinally extending base portion and radially-extending teeth, said bar being positioned within said outer sleeve and with said teeth passing radially outwardly through said holes,

an inner sleeve within said outer sleeve and said tooth bars, dimensioned to pressingly engage said bars between said inner and outer sleeves to hold same in fixed position within said outer sleeve with said teeth extending radially,

said inner and outer sleeves defining a heat distribution plenum therebetween, and

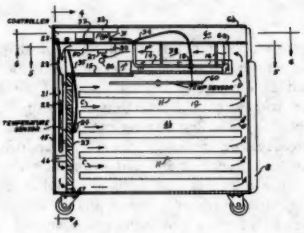
electrical heating means positioned within said inner sleeve.

4,623,780

COLLECTRAMATIC FOOD WARMER

Winston L. Shelton, Jeffersontown, Ky., assignor to Properties Leasing Company Inc., Louisville, Ky.

Continuation-in-part of Ser. No. 187,359, Sep. 15, 1980, abandoned. This application Aug. 8, 1983, Ser. No. 521,344
Int. Cl.[4] F27D 11/00
U.S. Cl. 219—401 9 Claims



1. An apparatus for processing food at selected temperatures including food holding cabinet means defining a chamber; food support means disposed within said chamber to receive said food to be processed; liquid reservoir means to hold a selected liquid to be evaporated from a surface thereof; first heater means to heat said liquid to be evaporated to a first temperature, second heater means to heat vapor emitted from said liquid to increase the temperature of the vapor above said surface to a second temperature and distribution means to direct said vapor emitted from said surface of said liquid and said second heater means to said food chamber to contact said food to be processed; first control means to simultaneously supply power to said first heater means and said second heater

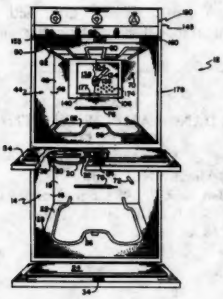
means in response to change in temperature of said liquid in said reservoir and supply power to said first heater means and said second heater means in selected proportional relationship to cause said first and second heater means to supply heat to said liquid and said vapor at a rate equal to said selected proportional relationships.

4,623,781

DOUBLE WALL OVEN WITH SAFE LIMIT TEMPERATURE CONTROL

Calvin J. Thomas, Orefield, Pa., assignor to Raytheon Company, Lexington, Mass.

Filed Feb. 8, 1985, Ser. No. 699,614
Int. Cl.[4] H05B 1/02
U.S. Cl. 219—413 **17 Claims**



1. In combination:
a first oven cavity;
a source of thermal energy for heating said first oven cavity for cooking and self-cleaning;
a second oven cavity adjacent to said first oven cavity;
a source of thermal energy for heating said second oven cavity for cooking and self-cleaning;
means coupled to said first oven cavity for providing a signal when said first oven cavity rises above a first predetermined temperature;
a temperature sensor coupled to said second oven cavity; and
means responsive to both said signal and said second oven cavity temperature sensor for preventing said first oven cavity from rising above said first predetermined temperature when said second oven cavity is above a second predetermined temperature.

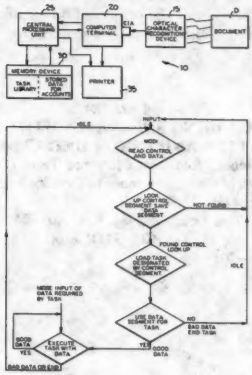
4,623,782

COMPUTER SYSTEM WHEREIN CONTROL SEGMENT OF INFORMATION LOADS THE TASK IN THE COMPUTER AND DATA SEGMENT OF THE INFORMATION EXECUTES THE TASK LOADED IN THE COMPUTER

Lawrence Faber, Sunnyvale, Calif., assignor to Modi Partnership, Sunnyvale, Calif.

Filed Mar. 11, 1983, Ser. No. 474,532
Int. Cl.[4] G06K 9/00
U.S. Cl. 235—379 **6 Claims**

1. A computer system in which a document displays alphanumeric characters representing control information and representing account identification information, said computer system comprising:
(a) an optical character recognition device for reading in a single operational step said control information and said account identification information to produce therefrom digital control information and digital account identification information;
(b) a memory device for storing a task library and for storing data from a plurality of accounts; and
(c) a data processor receiving said digital control information for addressing a task in said task library to carry out the task addressed in said task library, said data processor



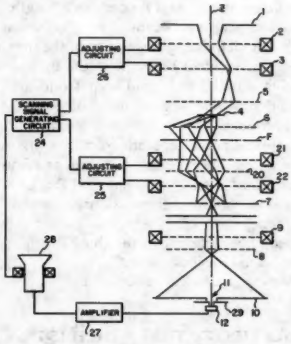
receiving said digital account identification information for addressing the data of an account of said plurality of accounts identified by said digital account identification information to retrieve data from the account addressed for executing the task addressed.

4,623,783

METHOD OF DISPLAYING DIFFRACTION PATTERN BY ELECTRON MICROSCOPE

Yukihito Kondo, Tokyo, Japan, assignor to Jeol Ltd., Tokyo, Japan

Filed Jun. 10, 1985, Ser. No. 743,015
Int. Cl.[4] H01J 37/26
U.S. Cl. 250—310 **4 Claims**



1. A method of displaying a diffraction pattern by an electron microscope, comprising the steps of:
(A) scanning a specimen with an electron beam in such a way that the incidence angle of the beam upon the specimen is change while the point at which the beam falls upon the specimen remains fixed;
(B) bringing a diffraction pattern to focus on a certain plane by means of an auxiliary lens, the diffraction pattern being formed on the focal plane at the back of an objective lens;
(C) projecting the focused diffraction pattern to a large scale;

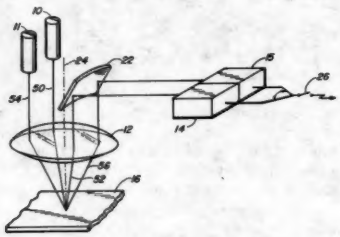
(D) stopping the movement of the diffraction pattern that has been caused by the changing incidence angle of the beam;
(E) extracting only a portion of the diffraction pattern focused on the certain plane;
(F) detecting an electron beam which constitutes the extracted portion of the projected diffraction pattern; and
(G) displaying the resulting signal corresponding to the scanning of the specimen.

4,623,784

LASER RECORDING APPARATUS WITH OFF-CENTER LENS AND ERROR DETECTION

Richard Haddock, Redwood City, and Terri Lichtenstein, San Mateo, both of Calif., assignors to Drexler Technology Corporation, Mountain View, Calif.

Filed Dec. 20, 1984, Ser. No. 684,352
Int. Cl.[4] G11B *7/00*
U.S. Cl. 250—201 **7 Claims**



1. An optical laser system comprising,
a first laser emitting a first incident laser beam of a first wavelength on a first optical path,
a second laser emitting a second incident laser beam of a second wavelength on a second optical path, said second beam being parallel to said first beam,
a broadband lens capable of transmitting light of both said first wavelength and said second wavelength for deflecting and focussing said beams onto a common point of a medium, said lens being positioned in the first and second paths of said incident beams with the optical axis of said lens being parallel to, equidistant from, and off center from said first and second incident beams, said beams being redirected at the common point onto third and fourth optical paths separate from the first and second paths of said incident beams, said third and fourth paths of said redirected beams traversing said lens at points opposite the said optic axis from said corresponding incident beams, and
at least one photodetector in the third and fourth paths of said redirected beams.

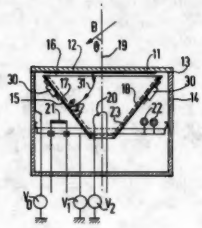
4,623,785

PHOTOMULTIPLIER TUBE WHICH IS INSENSITIVE TO HIGH MAGNETIC FIELDS

Pierre L'hermite, Brive, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 17, 1984, Ser. No. 611,264
Claims priority, application France, May 25, 1983, 83 08620
Int. Cl.[4] H01J *40/14, 43/04*
U.S. Cl. 250—207 **11 Claims**

1. A photomultiplier tube comprising:
a transparent window;
a thin layer of a photoemissive material on the window;
a dynode formed of a metallic sheet with a circumference substantially surrounding the layer of photoemissive material, said dynode having an inner surface with a layer of a secondary emissive material on the inner surface; and



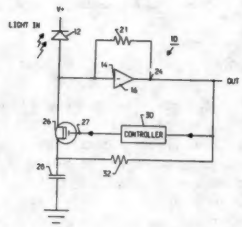
an anode formed of a metallic grid, said anode being arranged parallel to and spaced from the inner surface of the dynode.

4,623,786

TRANSIMPEDANCE AMPLIFIER WITH OVERLOAD PROTECTION

Mark J. W. Rodwell, San Mateo, Calif., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 7, 1984, Ser. No. 669,079
Int. Cl.[4] H01J *40/14*
U.S. Cl. 250—214 A **5 Claims**



1. A transimpedance amplifier circuit, comprising:
an amplifier having an input and an output
a first feedback impedance element connected between the input and the output of the amplifier;
a field-effect shunt resistor having one side of its conduction path connected to the input of the amplifier;
a decoupling capacitor connected at one side to another side of the conduction path of the transistor and connected at another side to a reference potential means, and
a shunt transistor control means having an input connected to the output of the amplifier and having its output connected to the control electrode of the shunt transistor,
wherein the improvement comprises:
a second feedback impedance element connected between the output of the amplifier and the common node of the shunt transistor and the capacitor.

4,623,787

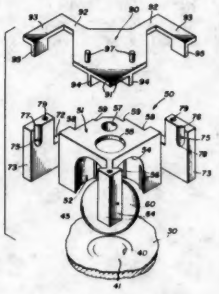
BALL AND TRANSDUCER MOUNTING ARRANGEMENT FOR MOUSE

Syng N. Kim, Hoffman Estates, Ill., assignor to Wico Corporation, Niles, Ill.

Filed Dec. 5, 1983, Ser. No. 557,889
Int. Cl.[4] G01V *9/04*
U.S. Cl. 250—221 **18 Claims**

1. Position indicating control apparatus for electronically representing position and movement along a support surface,

said apparatus comprising: a housing having an apertured base member, spherical means for supporting said housing on the support surface and transporting said housing over the support surface, frame means discrete from and disposed entirely within said housing and defining a recess receiving said spherical means therein, means for mounting said frame means substantially immovably with respect to said housing, said frame means cooperating with said base for loosely encompassing said spherical means and constraining it in a mounted condition



in said housing, said spherical means in its mounted condition being universally rotatable and having a portion thereof extending through said aperture in said base member so that contact between said spherical means and the support surface provides rotation of said spherical means indicative of movement of said housing with respect to the support surface, and transducer means coupled to said spherical means and responsive to rotation thereof for producing electrical signals indicative of the movement and position of said housing.

4,623,788

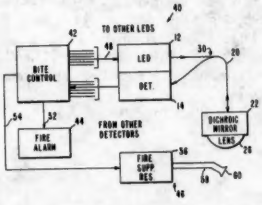
FIBER OPTIC SYSTEM WITH SELF TEST USED IN FIRE DETECTION

Mark T. Kern, Goleta, and Steven E. Hodges, Santa Barbara, both of Calif., assignors to Santa Barbara Research Center, Goleta, Calif.

Filed Dec. 2, 1983, Ser. No. 557,684

Int. Cl.[4] H01J 5/16

U.S. Cl. 250—227 **32 Claims**



1. A test apparatus for testing a fire detection system incorporating fiber optics between a detector coupled to a proximal end of a fiber optics element and a light pickup coupled to the distal end of said element, the test apparatus comprising:

a reflective/transmissive member mounted at the distal end of the fiber optics element for reflecting light reaching the member from the fiber optics element while passing light directed in the opposite direction into the fiber optics element;

a light source mounted adjacent to the detector for emitting a light pulse to be injected into the fiber optics element in the direction of the reflective/transmissive member;

means for coupling light pulses from the light source into the fiber optics element adjacent the proximal end and directing them toward said member while passing light in an opposite direction along the fiber optics element from said member toward the detector; and

means for selectively controlling the light source to emit light pulses in order to test the integrity of the fire detection system whereby light from the source is reflected by said member back to the detector through the fiber optics element during the test.

4,623,789

FIBEROPTIC PROBE FOR BRAIN SCANNING WITH DETACHABLE CANNULA GUIDE

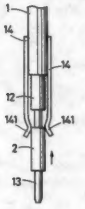
Masato Ikeda, Nara, and Kenji Kurokawa, Hyogo, both of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Mar. 7, 1984, Ser. No. 587,065

Claims priority, application Japan, Mar. 10, 1983, 58-35110[U]

Int. Cl.[4] H01J 5/16; A61M 5/00

U.S. Cl. 250—227 **5 Claims**



1. A fiberoptic probe for brain scanning formed on one end of a pair of incoming and outgoing optical conductors which comprises; and armoring-pipe which covers the outside of said pair and includes means for retaining, at least temporarily, a detachable cannula guide thereon.

4,623,790

APPARATUS FOR DIGITAL ANGULAR MEASUREMENT

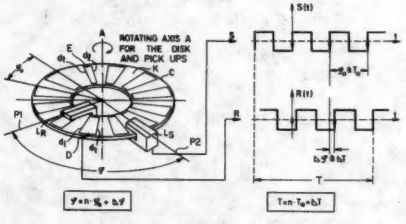
Hans R. Stössel, Rebstein, Switzerland, assignor to Wild Heerbrugg AG, Heerbrugg, Switzerland

Filed Feb. 29, 1984, Ser. No. 584,769

Claims priority, application Switzerland, Mar. 3, 1983, 1167/83

Int. Cl.[4] G01D 5/34

U.S. Cl. 250—231 SE **11 Claims**



1. An apparatus for digital measurement of an angle between first and second parts rotatable about a common axis, comprising:

a disk rotatable at a constant angular velocity about the common axis;

marks regularly distributed over said disk and forming a graduation, said graduation having at least one irregularity in a displacement of one edge in at least one of said

marks, said one mark forming a reference mark, an opposite edge of said one mark be displayed in a regular manner relative to corresponding edges of the other marks;

a space between each adjacent pair of said marks such that one of the spaces and one of said marks forms one graduation interval; and

first and second pick-up means, rigidly coupled to the first and second parts, respectively, for scanning said marks on said disk and producing alternating signals therefrom with a phase difference varing by 2π when one of the parts changes a position thereof relative to the other part by one graduation interval;

whereby the angle between said pick-up means can be measured by counting the number of entire graduation intervals between passages of said reference mark.

4,623,791

OPTICAL SCANNING DEVICE

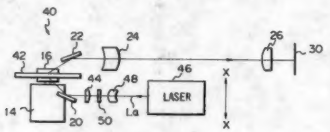
Yutaka Kaneko, Yokohama, and Hiroyoshi Funato, Chigasaki, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 14, 1985, Ser. No. 701,525

Claims priority, application Japan, Feb. 17, 1984, 59-28071

Int. Cl.[4] H01J *3/14*

U.S. Cl. 250—234 **6 Claims**



1. An optical scanning device for optically scanning a plane to be scanned, comprising:

rotatable grating disc means provided with a plurality of linear diffraction gratings in an annular arrangement for deflecting a laser beam which is incident to said grating disc means; and

laser beam incidence means for turning the laser beam incident to said grating disc means into a parallel beam, providing the parallel beam with an elliptical section in a position of incident on the grating disc means, and causing a longer axis of the elliptical section to extend in a radial direction of the grating disc means.

4,623,792

CORE LOGGING

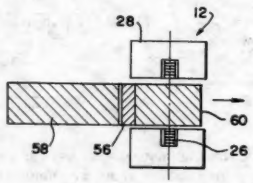
Rolf C. Böhme, Midrand, and Max M. Lazerson, Johannesburg, both of South Africa, assignors to General Mining Union Corporation Limited, Johannesburg, South Africa

Filed Mar. 21, 1985, Ser. No. 714,245

Claims priority, application South Africa, Mar. 23, 1984, 84/2155

Int. Cl.[4] G01N *37/00*

U.S. Cl. 250—255 **2 Claims**



1. A method of logging a grade distribution of a borehole core which includes the steps of notionally dividing the core into a plurality of contiguous segments, obtaining a measure of a characteristic of each segment, using a correction factor, derived from measurements taken for a segment of known characteristics positioned in an otherwise barren core, to correct the measure for each segment to compensate for contributions to the measure due at least to adjacent segments, and recording the corrected measure for each segment.

4,623,793

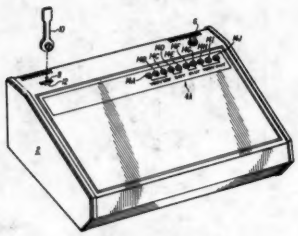
DEVICE AND METHOD FOR DETERMINING SKIN TYPE

Fred Hofke, East Greenville, Pa., and Irwin Margolin, Ardsley, N.Y., assignors to Revlon, Inc., New York, N.Y.

Filed Mar. 7, 1983, Ser. No. 472,547

Int. Cl.[4] G01J *1/00*; A61B *10/00*

U.S. Cl. 250—341 **16 Claims**



1. A device means for determining the skin type of a living subject utilizing an oil sample taken from the skin of the subject and held on a probe capable of permitting light to pass therethrougn, comprising:

means for impinging essentially monochromatic light on one side of said probe;

means for detecting that portion of the impinging light which is transmitted through said oil sample carried by said probe, said detecting means producing an output voltage proportional to the amount of light detected;

means for integrating said output voltage; and voltage for displaying the skin type of said living subject as a function of said integrated output voltage wherein said means for detecting includes amplifying means connected to receive said output voltage from said means for detecting and said essentially monochromatic light is infrared light.

4,623,794

PARTICLE BEAM BLANKING SYSTEM

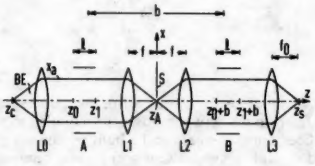
Harald Rose, Prinz-Christian-Weg 5a, D6100-Darmstadt, and Joachim Zach, Nauheim, both of Fed. Rep. of Germany, assignors to Harald Rose, Darmstadt, Fed. Rep. of Germany

Filed May 22, 1984, Ser. No. 612,850

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1983, 8336881[U]

Int. Cl.[4] H01J *3/26*

U.S. Cl. 250—396 R **4 Claims**



1. A particle beam blanking system for a corpuscular-optical beam path, comprising at least two deflection systems, a knife edge arranged between two of the deflection systems in an intermediate image plane, and means whereby the operating parameters of the deflection systems and the knife edge are so matched to the energy distribution of the particles that shifting of the particle beam in a probe plane disappears during particle

beam blanking operation, said two deflection systems being symmetrically disposed relative to the intermediate plane in which the knife edge is arranged, and a magnetic imaging system which, in the intermediate image plane, brings about a cross-over, whereby a second of said two deflection systems, in relation to the first of said two deflection systems is rotated corresponding to the Larmor rotation as a consequence of the intermediately disposed magnetic imaging system.

4,623,795

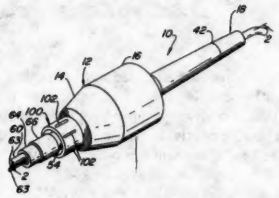
IRRADIATING DEVICE

Arthur A. Knopp, Chalfont; Nathaniel H. Lieb, Narberth, and Albert D. Alderman, Jr., Skippack, all of Pa., assignors to Penn-Med Technology, Inc., West Conshohocken, Pa.

Filed May 24, 1984, Ser. No. 613,860

Int. Cl.[4] F21V *29/00*

U.S. Cl. 250—504 H **15 Claims**



11. A hand-held irradiation device for directing radiation onto a substance in a desired wavelength range for curing said substance, said device being characterized by an elongate housing having a rear end and a forward end; a light-emitting lamp assembly located within said housing; a light transmitting tip extending outwardly of the forward end of the housing and having a downstream end adapted to be positioned adjacent the substance to be irradiated and an upstream end for receiving radiation from the light-emitting lamp assembly; a heat shield surrounding said lamp assembly and bridging the space between said lamp assembly and the upstream end of said light transmitting tip, said shield being spaced inwardly from the outer wall of the elongate housing to define an outer chamber between the shield and housing and an inner chamber within the shield; an entrance conduit for receiving a pressurized cooling gas communicating through the rear end of the housing and being attachable to a source of pressurized gas; an exit conduit means also communicating through the rear end of the housing for directing the pressurized gas out of the housing after it has moved through the outer and inner chambers and channeling means for directing substantially all of the pressurized gas from the entrance conduit, through the outer and inner chambers in opposite directions, and out of the elongate housing through the exit conduit means.

4,623,796

TANNING APPARATUS WITH MEANS WHICH AID FACIAL TANNING

Walter Kratz, Auf der Heide 21, D-5208 Eitorf, Fed. Rep. of Germany

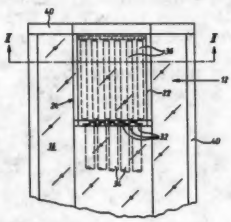
Filed Apr. 8, 1985, Ser. No. 720,728

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1984, 3413662

Int. Cl.[4] A61N *5/06*

U.S. Cl. 250—504 R **16 Claims**

1. A tanning apparatus with means which assist facial tanning and low pressure tubes irradiating in the UV-A spectral range, said tubes being arranged in a plate which is at least transparent for UV-A rays in a lower part shaped in the form of a bed and/or in a downwardly radiating upper part of the tanning apparatus over the entire longitudinal extension thereof, a reflector being provided on the side of the low pressure tubes remote from the tanning body, wherein the means aiding facial tanning in the region of the tanning apparatus where the face to be tanned is located comprises further low pressure tubes over and beyond the low pressure tubes extending over the length of the tanning apparatus.



4,623,797

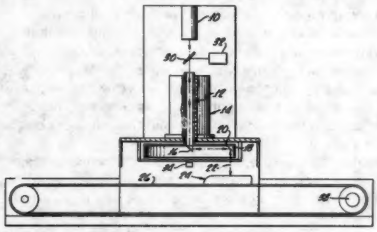
EVENT SCANNING

Homer L. Eaton, Leucadia, and Joe Schmidt, Oceanside, both of Calif., assignors to MTS Vektronics Corporation, Carlsbad, Calif.

Filed Jun. 27, 1983, Ser. No. 507,925

Int. Cl.[4] G01N *21/86*

U.S. Cl. 250—560 **39 Claims**



1. The method of scanning surface characteristics of an object to selectively obtain data representing only portions of the surface having selected characteristics comprising

moving a scanning energy beam in a scan pattern across the object so that beam energy reflected from discrete positions on the object is detectable,

relatively moving the object and scan pattern to cause the beam to illuminate areas on the surface of the object in scan paths that repetitively cross the object,

generating position signals representing the position of the beam in said scan paths, in reference to discrete positions on the object,

detecting energy of said beam reflected from said object at such discrete positions,

employing the magnitude of detected energy to select certain of the position signals, each corresponding to a selected discrete position, based upon the occurrence of a detected energy magnitude at one of a plurality of different magnitudes of detected energy, and

employing the selected position signals and the magnitude associated with each such selected position signal to define details of the surface characteristics of only those portions of the object having the selected characteristics of the object.

4,623,798

THERMOSENSITIVE SWITCHING CIRCUIT HAVING COMPARATOR WITH OPEN COLLECTOR OUTPUT

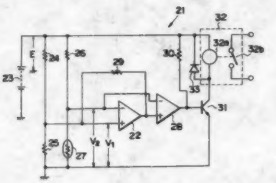
Kenji Arai, Saitama, and Kazumasa Kurihara, Gunma, both of Japan, assignors to Diesel Kiki Co., Ltd., Japan

Filed Aug. 13, 1982, Ser. No. 407,915

Claims priority, application Japan, Aug. 17, 1981, 56-121072[U]

Int. Cl.[4] H03K *17/00*

U.S. Cl. 307—117 3 Claims



1. A thermosensitive switching circuit, comprising;

a direct current voltage source;

means including a first voltage divider for producing a reference voltage with a predetermined constant level by dividing the voltage of said direct current voltage source by the use of resistors;

means including a second voltage divider including a thermosensitive resistor for detecting temperature by dividing the voltage of said direct current voltage source to produce a detection voltage signal whose changes in response to changes in the temperature to be detected;

means including a first voltage comparator for comparing the level of said reference voltage with the level of said detection voltage signal, said first voltage comparator having an open-collector type output circuit;

means including a feedback resistor connected between an output terminal and an input terminal of said first voltage comparator to provide a hysteresis characteristic to the comparing operation of said first voltage comparator;

means including a second comparator responsive to the change in the output level of said first voltage comparator; and

a switching means which is closed or opened in response to the change in the output level of said second voltage comparator for controlling current to a device to be controlled.

4,623,799

HIGH SPEED ANALOG/DIGITAL DRIVER

Phillip A. Nyman, Jr., Torrance, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Mar. 27, 1985, Ser. No. 716,794

Int. Cl.[4] H03K *3/78, 5/01, 5/08*

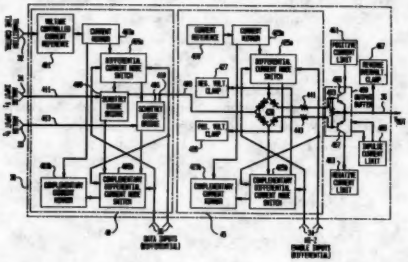
U.S. Cl. 307—260 18 Claims

1. A driver comprising:

input switching means, connected to a data select signal and to a plurality of analog input signals, for selecting a desired one of said analog input signals and applying said selected analog input signal as an output signal thereof, wherein said input switching means comprises a plurality of first switching bridges each having an input node, and an output node, each of said first switching bridges being responsive at its input node to a corresponding one of said analog input signals, and the output signal of said input switching means being responsive to a signal appearing at the output node of any of said first switching bridges,

second switching means, having a second switching bridge connected in series with the output of said input switching means, wherein said second switching means is responsive to an enable signal for either selectively causing said second switching bridge to assume a conductive state and thereby route said selected analog input signal, appearing at the output of said input switching means, through said second switching bridge as an output signal thereof or selectively assume a non-conductive state; and

a buffer, responsive to the output of said second switching bridge, for amplifying said selected analog signal appearing at the output of said second switching bridge and applying the resulting amplified signal as an output of said driver, or alternatively causing said driver output to assume a high-impedance state whenever said second switching bridge becomes non-conductive.



4,623,800

CLOCK CONTROLLED DUAL SLOPE VOLTAGE TO FREQUENCY CONVERTER

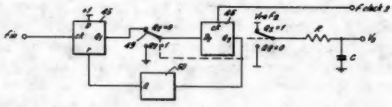
Timothy D. Price, Bognor Regis, England, assignor to Rosemount Engineering Company Limited, England

Continuation of Ser. No. 472,868, Mar. 3, 1983. This application Dec. 27, 1985, Ser. No. 815,302

Claims priority, application United Kingdom, Mar. 17, 1982, 8207796

Int. Cl.[4] H03K *5/00, 5/153;* H01P *3/08*

U.S. Cl. 307—261 20 Claims



1. Clock-controlled dual slope voltage to frequency converter comprising, an input terminal to provide an input voltage to the converter, an integrator connected to said input terminal to provide an output signal having a charging slope dependent on said input voltage, a clock pulse source, comparator means providing an output indication in response to and in synchronism with each occasion the output signal of the integrator exceeds a predetermined threshold level during charging, discharge pulse generating means connected to an output terminal of the comparator means and to the clock pulse source and supplying, following said output indication, a constant current discharge pulse to the integrator having a constant pulse duration determined by clock pulses from the clock pulse source, whereby the output signal of the integrator has a discharging slope and falls below said predetermined threshold

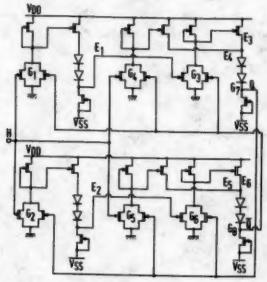
level during each said constant current discharge pulse, and frequency signal output means including at least one output terminal of the converter and connected to the output terminal of the comparator means to provide a frequency signal on said at least one output terminal of the converter synchronized with the output indications of the comparator means, the comparator means providing an output pulse as each said output indication and the frequency signal output means including an electrical connection from the output terminal of the comparator means to said at least one output terminal, so that said frequency signal on said at least one output terminal is constituted by successive said output pulses of the comparator means and is not phase related to the clock frequency.

4,623,801

DIVIDE-BY-TWO FREQUENCY DIVIDER

Marc Rocchi, Emerainville, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 19, 1984, Ser. No. 622,351
Claims priority, application France, Jun. 29, 1983, 83 10739
Int. Cl.⁴ H03K *3/289, 3/356, 19/017, 19/20*
U.S. Cl. 307—272 A **5 Claims**



1. An integrated divide-by-two frequency divider circuit comprising master-slave flip-flop stages having first and second complementary outputs Q and $\overline{Q}$ in buffered FET logic and a single input for a control signal H in the gigahertz frequency range, characterized in that:

the master stage comprises two NOR gates (G_1, G_2), the first of which (G_1) has first and second inputs connected to receive the control signal H at the second input and the output signal $\overline{Q}$ at the first input by a first feedback path, the said first NOR gate (G_1) having an output of which it produces an output signal E_1; the second NOR gate (G_2) of the master stage having first and second inputs connected to receive the control signal H at the first input and the output signal Q at the second input by a second feedback path, such second NOR gate (G_2) having an output of which it produces an output signal E_2;

the slave stage comprises four NOR gates (G_3, G_4, G_5 and G_6), the first of which (G_3) has first and second inputs connected to receive said output signal E_1 at the first input and to receive said output signal $\overline{Q}$ at the second input by a third feedback path; the second NOR gate (G_4) of the slave stage having first and second inputs connected to receive said output signal $\overline{Q}$ at the first input by said third feedback path and to receive said control signal H at the second input; the third NOR gate (G_5) of the slave stage having first and second inputs connected to receive said control signal H at the first input and said output signal Q at the second input by a fourth feedback path; and the fourth NOR gate (G_6) of the slave stage having first and second inputs connected to receive said output signal Q at the first input by said fourth feedback path and to receive said output signal E_2 at the second input;

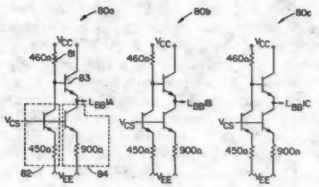
the first two NOR gates (G_3 and G_4) of the slave stage respectively having outputs which are interconnected by a wired-OR gate (G_7) producing such output signal Q, and the second two NOR gates (G_5 and G_6) of the slave stage respectively having outputs which are interconnected by a further wired-OR gate (G_8) producing said output signal $\overline{Q}$.

4,623,802

MULTIPLE-STAGE GATE NETWORK HAVING INDEPENDENT REFERENCE VOLTAGE SOURCES

Ronald L. Cline, Monte Sereno, and John G. Campbell, Los Altos, both of Calif., assignors to Fairchild Semiconductor Corporation, Cupertino, Calif.

Continuation-in-part of Ser. No. 518,499, Aug. 1, 1983, abandoned. This application May 17, 1984, Ser. No. 611,454
Int. Cl.⁴ H03K *19/086*
U.S. Cl. 307—297 **8 Claims**



1. In a circuit having first and second gate stages, each of said gate stages having a singlesided signal input terminal, a threshold voltage input terminal, and a signal output terminal, the signal level at said signal output terminal being determined by the signal level at said signal input terminal relative to the level at said threshold input terminal, the improvement comprising:

first and second threshold voltage sources for providing the same nominal threshold voltage, each having a voltage output terminal at which the nominal threshold voltage is provided, the voltage output terminals of said first and second voltage sources being coupled to said threshold input terminals of said first and second gate stages, respectively;

wherein said first and second threshold voltage sources are isolated from one another such that current drawn from the voltage output terminal of either one of said threshold voltage sources results in substantially no change in the level at the voltage output terminal of the other of said threshold voltage sources.

4,623,803

LOGIC LEVEL TRANSLATOR CIRCUIT FOR INTEGRATED CIRCUIT SEMICONDUCTOR DEVICES HAVING TRANSISTOR-TRANSISTOR LOGIC OUTPUT CIRCUITRY

Michael D. Thompson, Scotts Valley, and Nikhil C. Mazumder, San Jose, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Nov. 8, 1983, Ser. No. 550,263
Int. Cl.⁴ H03K *19/013, 19/092, 17/04, 17/60*
U.S. Cl. 307—475 **5 Claims**

1. An improved logic translator circuit for translating between non-transistor-transistor logic (non-TTL) circuitry and transistor-transistor logic (TTL) circuitry, said translator circuit comprising:

an output-stage circuit including a phasesplitting transistor, having a collector terminal and an emitter terminal, and having a base terminal coupled to the non-TTL circuitry, said output-stage circuit including a first TTL output transistor having a collector terminal coupled to a reference voltage supply terminal, and a base terminal coupled to said collector terminal of said phase-splitting transistor, said output-stage circuit further including a second TTL

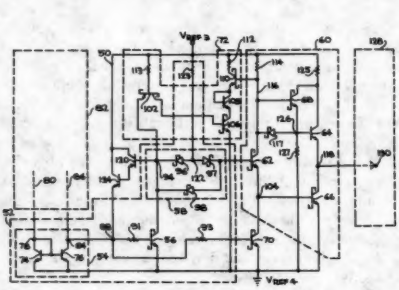
output transistor having its base terminal coupled to the emiter terminal of the phase-splitting transistor, and having its emitter terminal coupled to a reference voltage ground terminal with an emitter terminal of the first TTL output transistor and a collector terminal of the second TTL output transistor being coupled to a TTL output terminal of said output-stage circuit;

a first circuit means, coupled to the non-TTL circuitry, and coupled to the base terminal of said second TTL output transistor, for turning off said second TTL output transistor before said first TTL output transistor begins to turn on, when the output terminal of said outputstage circuit is switching from a logic-LOW to a logic-HIGH state;

a second circuit means, coupled to the non-TTL circuitry, and further coupled to the base terminal of said first TTL output transistor, for speeding up the switching of said first TTL output transistor, said second circuit means providing that said first TTL output transistor is turned off before said second TTL output transistor begins to turn on when the output terminal of said output-stage circuit is switching from a logic-HIGH to a logic-LOW state, and said second circuit means providing that, once said second TTL output transistor is turned off, the turning-on of said first TTL output transistor is speeded up when the output terminal of said output-stage circuit is switching from a logic-LOW to a logic-HIGH state;

an input stage circuit having:

(a) signal source means for providing an output signal on an



output terminal thereof, in response to a signal received from said non-TTL circuit, said signal source means including:

(i) a first input-stage transistor having a collector terminal coupled to a first output terminal of said non-TTL circuit, a base terminal coupled to said collector terminal of said first input-stage transistor and an emitter terminal coupled to said reference voltage ground terminal; and

(ii) a second input-stage transistor having a collector terminal coupled to a second output terminal of said non-TTL circuit, a base terminal coupled to said base terminal of said first input-stage transistor, and an emitter terminal coupled to said emitter terminal of said first input-stage transistor, such that said first and second inputstage transistors form a current mirror circuit;

(b) an input-transistor having a base terminal coupled to said output terminal of said signal source means, said base terminal of said input transistor being further coupled to said first circuit means, said input transistor also having an emitter terminal coupled to said reference voltage ground terminal and a collector terminal coupled through said second circuit means to said reference voltage supply terminal, and further coupled to the base terminal of said phase-splitting transistor, such that said input stage circuit couples said non-TTL circuit, through said first and second circuit means, to said output stage circuit; and

(c) a high threshold input circuit including:

(i) a first input diode element with a cathode terminal coupled to said collector terminal of said input transistor and an anode terminal coupled to said reference voltage supply terminal;

(ii) a second input diode element with an anode terminal connected to said reference voltage supply terminal and a cathode terminal coupled to the base terminal of said phase-splitting transistor; and

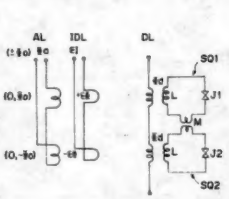
(iii) a third input diode element with a cathode terminal coupled to said collector terminal of said input transistor and an anode terminal coupled to said base terminal of said phase-splitting transistor.

4,623,804

FLUXOID TYPE SUPERCONDUCTING LOGIC ELEMENT

Eiichi Goto, Wako, Japan, assignor to Rikagaku Kenkyusho, Japan

Filed Jan. 31, 1984, Ser. No. 575,523
Claims priority, application Japan, Feb. 4, 1983, 58-17921
Int. Cl.[4] H03K *19/195*
U.S. Cl. 307—476 **6 Claims**



1. A flux-driven type superconducting logic element comprising:

a pair of magnetically connected radio frequency superconducting quantum interference devices, each device comprising a superconducting loop including an unshunted Josephson junction and inductance means, each device having a hysteresis pattern in its external-to-internal magnetic flux response characteristics and having substantially the same external upper magnetic flux threshold value above which threshold value an increase in external magnetic flux produces a step-wise increase in internal magnetic flux;

drive inductance means for applying a drive magnetic flux to each device, said drive magnetic flux being lower than the external upper magnetic flux threshold, such that in the absence of additional external magnetic flux being applied to said devices, the Josephson junctions therein are all operatively maintained in the superconducting state;

coupling inductance means for coupling the pair of device with each other so that a step-wise increase of internal magnetic flux in one of the devices suppresses any step-wise increase of internal magnetic flux in the other device;

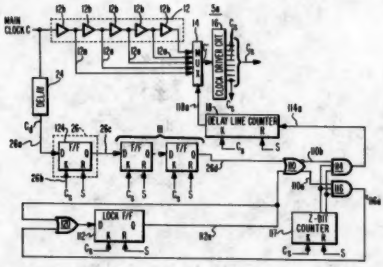
input inductance means for applying a relatively small amount of input magnetic flux to said devices in a differential way so that the strength of the external magnetic flux in one of said devices increases above its upper threshold value to cause the step-wise increase in the internal magnetic flux therein while supressing any step-wise increase in internal magnetic flux in the other of said devices; and

output inductance means providing an output magnetic flux resulting from the difference between the internal magnetic fluxes in said devices.

4,623,805
AUTOMATIC SIGNAL DELAY ADJUSTMENT APPARATUS

Laurence P. Flora, Covina, and Michael A. McCullough, Pasadena, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Aug. 29, 1984, Ser. No. 645,935
Int. Cl.[4] H03K *5/13, 5/159*
U.S. Cl. 307—602 **19 Claims**



1. Means for automatically providing a desired propagation delay between an input signal and an output signal produced by an electrical circuit in response thereto, said means comprising:

delay means responsive to said input signal for producing a plurality of delayed signals having different delays relative to said input signal;

means for applying a selected one of said delayed signals to said circuit;

detecting means responsive to a signal derived from said output signal for determining whether the propagation delay provided by a selected delayed signal is substantially equal to said desired propagation delay;

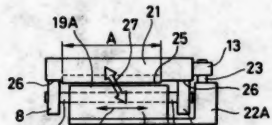
means for automatically selecting a different delayed signal if the propagation delay provided by a currently selected delayed signal is determined not to be substantially equal to said desired propagation delay; and

means for preventing selection of a different delayed signal when it is determined that the currently selected delayed signal provides a propagation delay which is substantially equal to said desired propagation delay.

4,623,806
LINEAR MOTOR

Junichi Yoshikawa, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 550,017, Nov. 8, 1983, abandoned. This application Aug. 27, 1985, Ser. No. 770,353
Claims priority, application Japan, Nov. 10, 1982, 57-196922
Int. Cl.[4] H02K *41/00*
U.S. Cl. 310—12 **8 Claims**



1. A linear motor comprising:

stator means of a magnetic material;

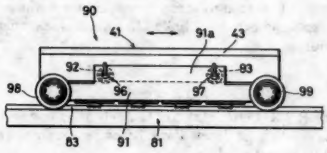
movable element means of a magnetic material movable along said stator means, said movable element means having the same width as said stator means and being arranged at a position displaced from said stator means in a direction parallel to the facing planes of the movable element means and the stator means and substantially normal to the direction of movement of said movable means along the stator means; and

support means for supporting said movable element means at said position displaced from said stator means.

4,623,807
LINEAR PULSE MOTOR

Tooru Nakamura, Mie, Japan, assignor to Shinko Electric Co., Ltd., Japan

Filed Jun. 27, 1985, Ser. No. 749,492
Claims priority, application Japan, Jun. 29, 1984, 59-136233
Int. Cl.[4] H02K *41/00*
U.S. Cl. 310—12 **5 Claims**



1. In a linear pulse motor comprising a head fixed to a movable body, and a stationary body comprising a stator, the improvement comprising support means for maintaining a constant air gap between said stationary body and said movable body, said support means including a pair of spaced-apart ridges defined by said stationary body, said pair of ridges extending substantially in parallel with each other along the lengthwise direction of said stationary body, at least two axles fixed to said movable body and including respective end portions, rolling bearings supported on said end portions of said two axles respectively, said rolling bearings riding on said stationary body so as to maintain said air gap, one of said rolling bearings being fixed to one of said end portions of each of said axles, and the other of said rolling bearings being slidably fitted to the other of said end portions, and including biasing means arranged between said movable body and said others of the rolling bearings so as to press side surfaces of said ones of the rolling bearings against a side surface of one of said ridges, and to press side surfaces of said others of the rolling bearings against a side surface of the other of said ridges, said side surface of said one of said ridges serving as a reference line for regulating the movement of said movable body.

4,623,808
ELECTROMECHANICAL TRANSDUCER PARTICULARLY SUITABLE FOR A LINEAR ALTERNATOR DRIVEN BY A FREE-PISTON STIRLING ENGINE

William T. Beale, and Christopher G. Scheck, both of Athens, Ohio, assignors to Sunpower, Inc., Athens, Ohio

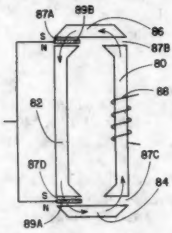
Continuation of Ser. No. 556,792, Dec. 1, 1983, abandoned. This application Apr. 4, 1985, Ser. No. 720,005
Int. Cl.[4] H02K *33/00*
U.S. Cl. 310—15 **6 Claims**

1. An electromechanical transducer comprising:

(a) a flux loop member which is stationary relative to the below described magnets, said member formed of a relatively high permeability material the flux loop member having at least two pairs of spaced gaps formed transversely through said loop member to provide at least two pairs of gaps in each flux loop, each pair of gaps aligned along a reciprocation path;

(b) an armature coil wound about said loop member; and

(c) at least two magnets each mechanically mounted for reciprocation along the reciprocation path for a different one of said pairs of gaps to alternate positions within the



gaps of each pair, said magnets having a magnetization vector transverse to their reciprocation paths and across said gap and drivingly linked to a mechanical energy input or output.

4,623,809

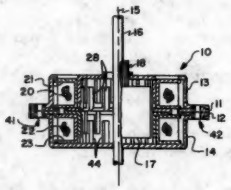
STEPPER MOTOR HOUSING AND POLE ASSEMBLY

Curtis E. Westley, St. Louis Park, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 16, 1984, Ser. No. 590,232

Int. Cl.[4] H02K *37/00*

U.S. Cl. 310—49 R **13 Claims**



1. A stepper motor comprising:

first and second annular stator plates, each having first and second faces, a central opening and a first plurality of poles surrounding the opening and projecting from the first face, said stator plates being positioned so that the second faces are in contact, whereby the first pluralities of poles project in opposite directions, said stator plates each being formed with a first locating protrusion on the second face thereof which is received by a first aperture in the other of said stator plates; and

first and second stator cups, each having a back wall, a peripheral side wall extending transversely from an inner face of the back wall and a second plurality of poles projecting from the inner face and arranged to be interleaved with the poles in one of the first pluralities of poles, the peripheral side wall terminating in an outwardly extending flange along at least a major portion of the length thereof, said first and second stator cups being positioned on opposite sides of said first and second stator plates with the second pluralities of poles projecting toward one another and interleaved with the first pluralities of poles, the flanges on the peripheral walls of said first and second stator cups each having a major surface in contact with the first face on a separate one of said first and second stator plates, the flange on each of said stator cups further having a second aperture therein which receives a tubular second locating protrusion on the first face of the stator plate with which that stator cup is in contact.

4,623,810

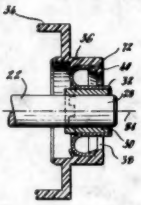
IMPROVED HEAT SINK AND SHAFT BEARING SUPPORT FOR THERMO-PLASTIC HOUSING

Peter B. Smith, Tarboro, N.C., assignor to Black & Decker Inc., Newark, Del.

Division of Ser. No. 538,439, Oct. 3, 1983, abandoned, which is a continuation of Ser. No. 209,052, Nov. 21, 1980, abandoned. This application Jan. 30, 1985, Ser. No. 696,633

Int. Cl.[4] H02K *5/16*; F16C *35/02*

U.S. Cl. 310—90 **4 Claims**



1. An electrically-operated, portable tool comprising:

(a) an electric motor including an armature shaft journaled at one end in a bearing body;

(b) a thin-walled, single piece metal body supporting said bearing body, said metal body including central, shoulder and collar segments, the central and collar segments extending longitudinally parallel to and concentrically about the axis of said shaft with the collar segment being radially outwardly spaced from the central segment, and the shoulder segment extending transversely to join said central and collar segments, said bearing body being positioned in said central segment;

(c) a thermoplastic housing including a flange extending radially inwardly toward said axis and a rib segment axially extending from said flange, said flange and rib segment defining an annular cavity concentric with said axis, the collar segment of said metal body being positioned in said cavity and engaging said housing to axially align said metal body with said shaft; and

(d) means for captivating said metal body in said housing.

4,623,811

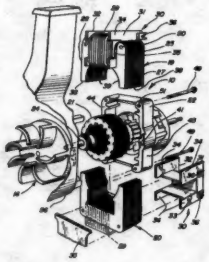
MOTOR-FAN ASSEMBLY FOR VACUUM CLEANER

Arne M. Nystuen, Lincoln Township, Berrien County, and John M. Kuss, St. Joseph Township, Berrien County, both of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed May 22, 1985, Ser. No. 737,141

Int. Cl.[4] H02K *19/20, 23/42*

U.S. Cl. 310—192 **13 Claims**



1. In a motor structure having an armature, support means for supporting said armature for rotation about an axis, a field

coil structure having a pair of opposed C-shaped, laminated cores, each core having a pair of legs forming motor poles, each pole being defined by an armature surface spaced radially from the armature, and a distal end surface, the core further defining a bight portion extending between said legs, said end surfaces of the legs of one core being opposed in spaced alignment with said end surfaces of the poles of the other of the pair of cores to define flux gaps therebetween, and a pair of field coils disposed one each about each said bight portions, the improvement comprising:

a portion of said support means defining spacer means fitting between said end surfaces in said flux gaps for accurately maintaining the minimum spacing between said pole end surfaces and thereby providing an accurately sized air gap between said poles.

4,623,812

ELECTRIC MOTOR WITH THIN ROTOR-DAMPING LAYER

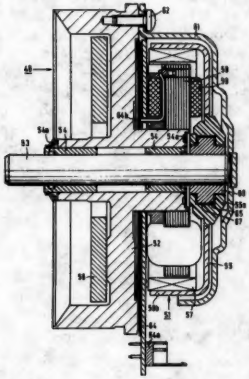
Jan M. van de Griend, Dordrecht, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 6, 1985, Ser. No. 708,751

Claims priority, application Netherlands, Mar. 12, 1984, 8400780

Int. Cl.[4] H02K *1/22*

U.S. Cl. 310—268 **9 Claims**



1. An electric motor, comprising a stator, a motor shaft, and a rotor mounted on the motor shaft,

said rotor comprising a rotor body having a central bore, said shaft extending through said bore, and an elastic layer which connects the rotor body to said shaft,

characterized in that said rotor body has a circumferential recess formed in said bore, said recess having a circumferential surface and a generally radially extending surface,

said shaft comprises a circumferential annular projection disposed within said recess and a given radial height, said projection having a circumferential surface facing said recess circumferential surface, and a generally radially extending surface facing said recess generally radially extending surface, the radial distance between said circumferential surfaces and the axial distance between said facing generally radially extending surfaces each being less than said radial height, and

said elastic layer is disposed at least between said circumferential surfaces and said generally radially extending surfaces, said elastic layer having a thickness which is small relative to the height of the circumferential projection.

4,623,813

LOAD SENSOR USING A PIEZOELECTRIC S.A.W. DEVICE

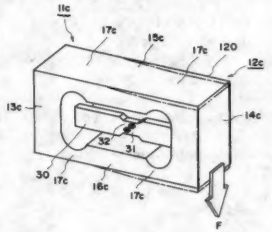
Kazufumi Naito, Ohtsu, and Mitito Utsunomiya, Kusatsu, both of Japan, assignors to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Dec. 24, 1984, Ser. No. 685,779

Claims priority, application Japan, Dec. 22, 1983, 58-243206

Int. Cl.[4] H01L *41/08*

U.S. Cl. 310—313 R **13 Claims**



1. A load sensor for sensing a load based on an oscillation frequency deviation of an elastic surface-wave oscillator having an elastic surface-wave resonator and an amplifier, comprising:

a fixed rigid portion fixedly secured to a stationary object;

a movable rigid portion disposed in spaced relation from said fixed rigid portion for receiving an applied load;

a shear-deformable member having one end portion fixedly secured to said fixed rigid member and an opposite end portion fixedly secured to said movable rigid member;

a shear-deformable portion provided on said shear-deformable member;

an elastic surface-wave resonator provided on said shear-deformable portion;

a first beam interconnecting an upper end of said fixed rigid portion and an upper end of said movable rigid portion; and

a second beam interconnecting a lower end of said fixed rigid portion and a lower end of said movable rigid portion, said first and second beams each having an arcuate cut-out at end portions thereof to form flexible portions of said end portions.

4,623,814

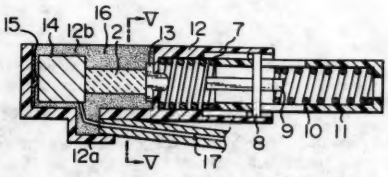
PIEZOELECTRIC HIGH-VOLTAGE GENERATING DEVICE

Kaneichi Kondo, Settu, and Tooru Ninomiya, Neyagawa, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 25, 1985, Ser. No. 801,313

Int. Cl.[4] H01L *41/08*

U.S. Cl. 310—339 **17 Claims**



1. A high-voltage generating device comprising: an outer case; an anvil member, a piezoelectric element and a support

member which are assembled together and held and fixed in said outer case by means of an adhesive; and an inner case slidably received in said outer case and accommodating a striking mechanism including a strike and a striker spring, wherein the improvement comprises that the element mounting space in said outer case has a volume which is at least 2.5 times as large as the volume of said piezoelectric element; and that said adhesive filled in said element mounting space is made of a plastic having a high bonding force and a high hardness.

4,623,815

HALOGEN INCANDESCENT-TYPE REFLECTOR LAMP, PARTICULARLY FOR DISPLAY ILLUMINATION

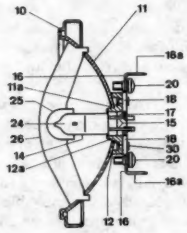
Rudolf Krieg, Munich; Friedrich Ziegler, Wolfratshausen, and Franz-Josef Bierbauer, Wörthsee, all of Fed. Rep. of Germany, assignors to Patent-Treuhand-Gesellschaft für elektrische Glühlampen mbH, Munich, Fed. Rep. of Germany

Filed Apr. 2, 1984, Ser. No. 596,015

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1983, 8310715[U]

Int. Cl.[4] H01K *1/34*

U.S. Cl. 313—113 **11 Claims**



1. A light-weight, front-disk-less halogen incandescent reflector-lamp combination interchangeable replacement for sealed beam spotlights, comprising

a thin, parabolic reflector (**11**) of metallic sheet material and having a rim portion projecting forwardly from the apex of the reflector;

a halogen incandescent lamp (**14**) located at the apex of the reflector; and

electrical connection means (**16**) located at the back side of the reflector,

wherein, in accordance with the invention, the combination comprises

a longitudinally stepped edge (**10**) formed on an outer edge of said rim portion of, and of the same sheet material as, the reflector (**11**), said outer edge being bent radially outward, and thence backwardly toward said reflector apex, thereby defining a hollow annular bead;

a high-temperature-ceramic base (**12**), the reflector being formed with a central opening (**11*a***), in which said base (**12**) is fitted, extending through the opening (**11*a***) of the reflector;

the ceramic base (**12**) being formed with a central opening (**17**);

the connection means (**16**) comprise a pair of terminal strips (**16**) located at opposite lateral edges of the base (**12**) and extending over the central opening (**17**) in the base, and further include angled-off end portions (**16*a***) shaped to receive push-on connectors (**21, 22**); and

wherein the halogen incandescent lamp (**14**) is located in the axis of the reflector (**11**) and has current leads (**15**) extending therefrom, passing through the central opening of the base (**12**) and being electrically and mechanically secured to the portions of the terminal strips (**16**) extending over said central opening.

4,623,816

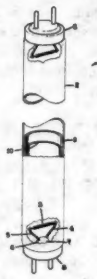
FLUORESCENT LAMP USING MULTI-LAYER PHOSPHOR COATING

Mary V. Hoffman, South Euclid, and John Paynter, Painesville, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 22, 1985, Ser. No. 726,196

Int. Cl.[4] H01J *1/63, 61/44*

U.S. Cl. 313—487 **4 Claims**



1. In a fluorescent lamp comprising a glass envelope having electrodes at its ends, a mercury and inert gas filling within said envelope which produces ultraviolet radiation, and a phosphor coating which converts a substantial portion of said ultraviolet radiation to visible illumination having a white color, the improvement wherein said coating comprises a dual layer of a first phosphor layer deposited on the inner glass surface and a second phosphor layer deposited on the first phosphor layer, said first phosphor layer comprising a calcium haloapatite phosphor exhibiting the desired white color point, and said second phosphor layer comprising a tri-phosphor blend employing a blue color emission phosphor, a lanthanum cerium orthophosphate phosphor activated with terbium ion having the general formula:

$$La_{1-x-y}Ce_xTb_yPO_4$$

wherein

x is in the approximate range 0.05–0.60, and

y is in the approximate range 0.05–0.20, and a europium-activated yttrium oxide phosphor having the general formula:

$$(Y_{1-a}Eu_a)_2O_3$$

wherein a is in the approximate range 0.016–0.040, said phosphors in the second phosphor layer also being blended in proportions to produce the desired white color point, and said phosphor coating producing higher luminous efficiency than is obtained with a conventional phosphor coating of the same type but at a reduced total phosphor cost.

4,623,817

INCANDESCENT LAMP HAVING TWO LEAD-IN CONDUCTORS SEALED WITHIN ONE END THEREOF

Merle E. Morris, and Stephen P. Senft, both of Lexington, Ky., assignors to GTE Products Corporation, Stamford, Conn.

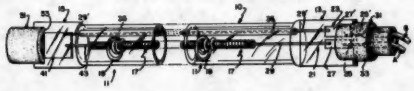
Filed Jan. 16, 1985, Ser. No. 691,965

Int. Cl.[4] H01J *1/90, 19/44*; H01K *1/18*

U.S. Cl. 313—275 **11 Claims**

1. In an incandescent lamp including a tubular envelope having first and second press sealed end portions, a coiled filament extending longitudinally through the interior of said envelope, a plurality of coiled filament support members within said envelope for supporting said filament at a location

between the ends of said filament, first and second lead-in conductors each extending within said envelope and electrically connected to a respective one of said ends of said coiled filament, both of said lead-in conductors being positioned within said first press-sealed end portion of said envelope in a spaced-apart relationship to thereby enable electrical connections for providing electrical energy sufficient to activate said filament to be attached to said incandescent lamp at only said first press-sealed end portion, and a tubular, electrically insula-



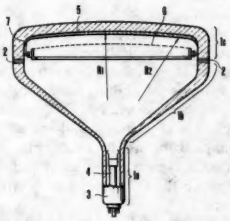
tive member located within said envelope and having an inner portion of said second lead-in conductor positioned therein, the improvement wherein said inner portion of said second lead-in conductor extends within said second press-sealed end portion of said envelope such that said tubular insulative member having said inner portion of said second lead-in conductor therein is located externally of said coiled filament support members to thereby space said tubular insulative member sufficiently from said coiled filament to prevent excessive heating and disfiguration thereof.

4,623,818

SHADOW MASK TYPE COLOR PICTURE TUBE

Eiichi Yamazaki, Ichihara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 17, 1984, Ser. No. 682,182
Claims priority, application Japan, Dec. 23, 1983, 58-241951
Int. Cl.[4] H01J *29/07, 29/86*
U.S. Cl. 313—408 **4 Claims**



1. A shadow mask type color picture tube wherein a shadow mask is opposed to an inner surface of a faceplate on which a phosphor screen is formed, characterized in that the radius of curvature of the inner surface of said faceplate is set to gradually decrease from the central portion thereof toward the peripheral portion of the useful picture area said gradual decrease being matched to compensate for the effect of doming in corresponding portions of an adjacent shadow mask.

4,623,819

ACCELERATING AND SCAN EXPANSION ELECTRON LENS MEANS FOR A CATHODE RAY TUBE

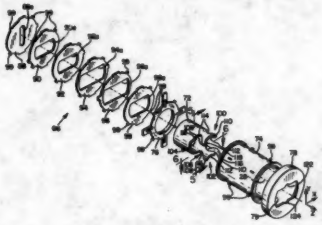
Bozidar Janko, Portland; Norman R. Franzen, Tigard, and Myron A. Bostwick, Jr., Banks, all of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Continuation of Ser. No. 453,447, Dec. 27, 1982, abandoned.
This application Aug. 12, 1985, Ser. No. 764,519
Int. Cl.[4] H01J *29/74, 29/46*
U.S. Cl. 313—432 **18 Claims**

1. In an electron discharge tube having an electron gun positioned at one end of the tube for producing a beam of electrons directed along a beam axis in the tube and deflection means for deflecting the electron beam to form an image, an electrostatic lens system positioned downstream of the deflection means along the beam axis and comprising:

slot lens means including a plurality of apertured electrodes having slots symmetrically aligned about the beam axis;

accelerating and scan expansion lens means including two aligned cooperating electrodes supported downstream of the slot means to provide in cooperation with the slot lens



means a linear magnification of the amount of electron beam deflection produced by the deflection means; and

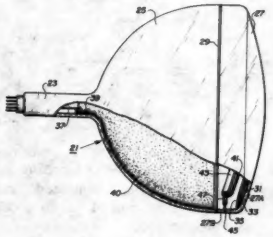
an exit lens means including a lens electrode supported adjacent the output of the accelerating and scan expansion lens means, the lens electrode having a slot aperture through which the beam travels and having means to receive a fixed potential to produce in the vicinity of the lens electrode electric field flux lines that change the direction of the beam in a manner that provides corrected geometry of the image.

4,623,820

CRT WITH CARBON-PARTICLE LAYER ON A METALLIZED VIEWING SCREEN

Samuel B. Deal, Manheim Township, Lancaster County, and Donald W. Bartch, Hellam Township, York County, both of Pa., assignors to RCA Corporation, Princeton, N.J.

Filed May 7, 1984, Ser. No. 607,596
Int. Cl.[4] H01J *29/10*
U.S. Cl. 313—466 **6 Claims**



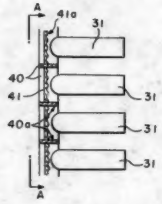
1. A cathode-ray tube comprising a screen support, a luminescent viewing screen on said support, said viewing screen having a mosaic of areas of different emission colors, said tube including a metal mask spaced from said screen and having therein an array of apertures in register with areas of said screen, means for exciting said screen to luminescence with at least one electron beam, a light-reflective layer of metal on the back of said screen, and a layer of particles of graphite and/or amorphous carbon on said light-reflective layer, said carbon-particle layer containing in addition preformed silica particles less than 0.1 micron in size as a binder therefor, said silica particles being substantially free from metal-ion containing substances wherein the weight ratio of said carbon particles to silica particles is in the range of 0.9 to 1.1.

4,623,821

COLOR IMAGE DISPLAY DEVICE

Hiroo Kobayashi, Kusatsu, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 7, 1984, Ser. No. 668,965
Claims priority, application Japan, Dec. 7, 1983, 58-231984
Int. Cl.[4] H01J *31/00*
U.S. Cl. 313—478 **5 Claims**



1. A color image display device having an arrangement of a plurality of cathode ray tubes, each of said tubes having a plurality of fluorescent layers to emit light in different elementary colors, said device further comprising:

an optical sectioning plate interposed between adjacent light emitting parts of said cathode ray tubes wherein the inside surface of said optical sectioning plate is rendered a mirror-surface; and

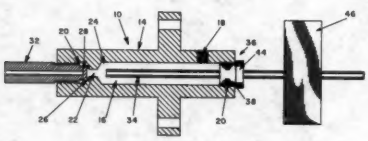
a light diffusing plate opposite to the front face of the light emitting part of each of said cathode ray tubes wherein said light diffusing plate is supported by said optical sectioning plate and wherein said light diffusing plate provides an improved image.

4,623,822

ELECTRODELESS DISCHARGE RESONANCE LAMP

Gerald M. Provencher, Omaha, Nebr., assignor to InterNorth, Inc., Omaha, Nebr.

Filed Sep. 26, 1984, Ser. No. 654,395
Int. Cl.[4] H01J *7/46, 7/26, 41/12, 17/22*
U.S. Cl. 315—39 **5 Claims**



4. A photolysis initiation reactor comprising a vessel containing an electrodeless discharge resonance lamp for producing light by microwave excitation of gas molecules wherein said lamp is removably secured to said vessel and said lamp comprises:

(a) a head having a passage therethrough and a gas inlet port in communication with said passage,

(b) a window removably mounted in said passage at one end of said head, whereby said window prevents all gas flow into and out of said passage at the end of said head,

(c) gas flow tubing positioned in said passage such that one end of said tubing is located between said gas inlet port and said window and the other end of said tubing extends out of the end of said passage opposite said window, the outside diameter of said tubing being smaller than the inside diameter of said passage to allow gas to flow therebetween,

(d) means for removably securing said tubing in place and for preventing all gas flow out of said end of said passage opposite said window other than through said tubing, and

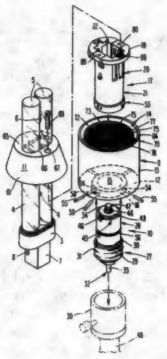
(e) microwave excitation means in communication with said tubing adjacent and exterior to said head.

4,623,823

ELECTRICAL ADAPTER FOR USE IN CONNECTION WITH FLUORESCENT LAMPS

Herman J. Engel, 9832 Dungan Rd., Philadelphia, Pa. 19115

Continuation of Ser. No. 534,082, Sep. 20, 1983, Pat. No. 4,570,105. This application Nov. 5, 1985, Ser. No. 795,228
The portion of the term of this patent subsequent to Feb. 11, 2003, has been disclaimed.
Int. Cl.[4] H01J *7/44*
U.S. Cl. 315—58 **24 Claims**



19. A fluorescent lamp adapter assembly for an incandescent lighting fixture means, comprising:

(a) a hollow housing;

(b) a base member associated with an extending from an end of said housing, and including at least two electrical contact means for establishing electrical interconnection with the incandescent lighting fixture means;

(c) a cover member associated with and extending from another end of said housing, and including at least two electrical contact means for establishing electrical interconnection with a fluorescent lamp and retaining means adapted to retain the fluorescent lamp within the adapter assembly; and

(d) an essentially toroidally shaped ballast means located within the housing and between the base member and the cover member, and electrically associated in series between one electrical contact means of said base member and one electrical contact means of said cover member, thereby permitting use of a fluorescent lamp in place of an incandescent light source.

4,623,824

CONTROLLED HIGH VOLTAGE GENERATOR

John E. Scolari, La Mesa; Robert T. Warner, Poway, and Joe E. Deavenport, San Diego, all of Calif., assignors to Life Light Systems, San Diego, Calif.

Filed Jun. 7, 1984, Ser. No. 618,055
Int. Cl.[4] H05B *37/00, 39/00, 41/14*
U.S. Cl. 315—241 R **26 Claims**

1. A controlled high voltage generator comprising:

flash lamp means;

storage capacitor means connected across said flash lamp means;

means connected to said flash lamp means for triggering said flash lamp means into conduction;

a DC power source;

an enable switch through which said power source is coupled to said high voltage generator

oscillator means coupled to said source of DC power;

a DC/AC inverter connected to the output of said oscillator means and to said DC power source;

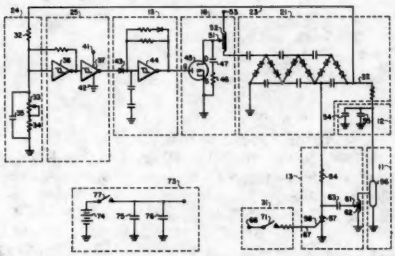
an AC/DC converter and voltage multiplier connected between said DC/AC inverter and said storage capacitor means to charge said storage capacitor means to a desired voltage level;

a feedback network;

comparator means connected between said feedback network and said oscillator; and

means for coupling the voltage level of said storage capacitor means output from said voltage multiplier to said feedback network, said comparator means actuating said oscillator means when a predetermined reduction in the voltage on said storage capacitor means below the desired voltage level is detected, and disabling said oscillator means when the desired voltage level on said storage capacitor means is achieved;

whereby such storage capacitor means is charged to and maintained substantially at the a desired voltage level



sufficient to actuate said flash lamp means as desired at a predetermined output level only when said enable switch is closed.

15. A method for repeatedly generating a controlled high voltage for firing flash lamp means, said method comprising the steps of:

applying a low DC voltage to a DC/AC inverter having a field effect transistor (FET) control means;

switching said FET on and off by oscillator means at a predetermined frequency to provide an amplified AC signal at the output of said inverter;

amplifying the AC voltage to a high level of about fifty times the value of said low DC voltage applied to said inverter;

converting said highly amplified voltage to a DC voltage;

applying the highly amplified voltage to a storage capacitor connected across the flash lamp;

feeding back the output voltage applied to the storage capacitor to a feedback network and comparator; and

controlling the operation of the oscillator means by the comparator so that whenever the voltage on the storage capacitor is below a predetermined level, the comparator provides a signal to actuate the oscillator means to recharge the capacitor.

4,623,825

DELAY COMPENSATION IN ELECTROMAGNETIC DEFLECTION SYSTEMS

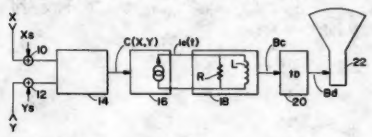
Clayton C. Wahlquist, West Valley City, Utah, and H. Wayne Olmstead, Hillsboro, Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Apr. 5, 1982, Ser. No. 365,658

Claims priority, application Japan, Apr. 3, 1981, 56-49522

Int. Cl.[4] H01J *29/70, 29/56*

U.S. Cl. 315—368 **14 Claims**



1. An electron beam deflection circuit for a cathode ray tube, comprising:

deflection coil means for deflecting the electron beam in said tube;

deflection signal generator means for applying a deflection signal to said coil means;

input means for supplying a beam position-related input signal;

correction signal generator means for producing an output correction signal in response to said beam position-related input signal and for applying said output correction signal to said deflection signal generator means to produce a corrected deflection signal; and

compensation means for adding a D.C. level shift signal to the beam position-related input signal to provide a compensated beam position input signal which is applied to the input of said correction signal generator.

4,623,826

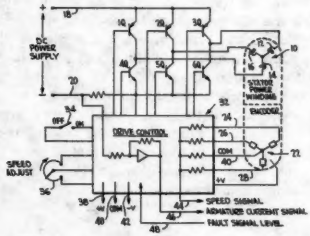
STALL PROTECTION CIRCUIT FOR BRUSHLESS MOTOR CONTROL

Kenneth A. Benjamin, and Charles W. Brouwer, both of Greensboro, N.C., assignors to John Brown Inc., Warwick, R.I.

Filed Jul. 31, 1984, Ser. No. 636,216

Int. Cl.[4] H02P *6/02*

U.S. Cl. 318—254 **28 Claims**



1. In combination with a brushless direct current motor of the type including an armature and stator windings and wherein said motor has a power supply including transistors for pulsing the power supply to said stator windings, a stall protector circuit coupled to said motor for detecting armature stall and then opening said power supply to said motor before full power is directed to those of said transistors associated with one only of said stator winding, said stall protector circuit including an encoder coupled to said armature for rotation thereby and for producing a speed signal to indicate a dynamic rotating condition, and further including an amplifier having as inputs a first bias having a negative voltage and a second bias

normally having a positive voltage less than said negative voltage wherein said amplifier normally has a negative output indicating armature rotation.

4,623,827

DEVICE FOR CONTROLLING MOTOR ROTATION SPEED

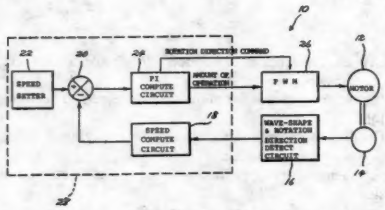
Norifumi Ito, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 5, 1986, Ser. No. 826,376

Claims priority, application Japan, Feb. 9, 1985, 60-22774; Feb. 22, 1985, 60-32860

Int. Cl.[4] H02P *5/16*

U.S. Cl. 318—341 **10 Claims**



1. A control device for varying a rotation speed of a motor within a predetermined range, comprising:

speed set means for setting a desired rotation speed of the motor and producing an output representation of the set rotation speed;

rotary encoder means operatively connected to the motor for generating a pulse signal having a pulse width which is associated with a rotation speed of the motor;

speed compute means for computing an actual rotation speed of the motor from the pulse width of the pulse signal outputted by said rotary encoder means and producing an output representative of the actual rotation speed, said speed comput means having a constant for computation;

compare means for comparing the computed rotation speed outputted by said speed compute means with the set value outputted by the speed set means and producing a difference signal representative of a difference between the computed rotation speed and the set value;

proportional integration compute means for performing proportional integration responsive to the difference signal outputted by said compare means and producing an output representative of an amount of operation based on a result of the computation;

pulse width modulator means for producing an output by pulse width modulating the output of said proportional integration computate means and controlling the rotation speed of the motor by the output; and

constant change means for changing the constant of the speed compute means.

4,623,828

MULTIPLE PHASE STEPPER MOTOR TORQUE CONTROL APPARATUS AND METHOD

William E. Schmitz, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

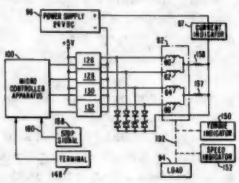
Continuation of Ser. No. 590,108, Mar. 19, 1984. This application Sep. 23, 1985, Ser. No. 779,306

Int. Cl.[4] H02P *8/00*

U.S. Cl. 318—696 **7 Claims**

1. In combination with a stepper motor door movement control apparatus including a stepper motor having multiple phases, means for coupling said motor to a door, means for sequentially exciting at least two of said phases in a predetermined excitation sequence, whereby at any time during operation of said stepper motor at least two of said phases are excited, the improvement which comprises:

means for simultaneously turning off the excitation to said excited phases for predetermined periods of said excitation sequence such that none of said multiple phases are excited during said off periods, whereby the pull-out torque of said motor may be varied by controlling the time of said off periods.



4,623,829

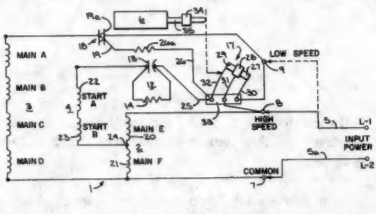
DUAL SPEED INDUCTION MOTOR

Howard W. Smith, West Carrollton, Ohio, and Robert H. Douthart, Burlington, N.C., assignors to A. O. Smith Corporation, Milwaukee, Wis.

Filed Sep. 7, 1984, Ser. No. 648,024

Int. Cl.[4] H02P *1/42*

U.S. Cl. 318—793 **17 Claims**



1. A multiple speed motor comprising a first speed winding means, a second speed winding means, a start winding means, three power terminals including a first power terminal connected to the first speed winding means and a second power terminal connected to the second speed winding means and a common power terminal connected to said first and second speed winding means and start winding means, gated run control switch means for the second of said first and second speed winding means, said run control switch means having a terminal gate for turning said switch means on, a speed responsive switch means having a position connecting said first and second power terminals and connecting said gate of said run control switch means and said start winding means to both said first and second power terminals and at selected speed operable to disconnect said first and second power terminals and to disconnect said start winding means and said gate of said run control switch means from said first and second power terminal.

4,623,830

ALTERNATING-CURRENT MACHINE DRIVE

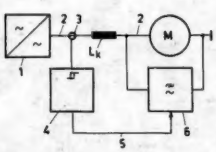
Franz Peneder, Fislisbach, and Vojen Suchanek, Nussbaumen, both of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Jul. 10, 1984, Ser. No. 629,464

Claims priority, application Switzerland, Jul. 13, 1983, 3831/83

Int. Cl.[4] H02P *5/40*

U.S. Cl. 318—798 **7 Claims**



1. An alternating-current machine drive, comprising:

a multiphase alternating-current machine;

a frequency converter generating an alternating current with a predeterminable variable frequency;

alternating current lines connecting said machine to said converter;

a frequency-variable filter having a resonance frequency and connected in parallel with said machine for filtering out at least one harmonic of said alternating current;

means for varying the resonance frequency of said filter as a function of the variable frequency of the current generated by said frequency converter;

said filter including for each phase of said alternating current and for each of said harmonics to be filtered out one series-tuned circuit tuned to the respective harmonic;

each of said series-tuned circuits having a filter capacitor connected in series with a filter choke;

said filter choke including a frequency-dependent resistive impedance;

each of said series-tuned circuits being connected at the input of said alternating-current lines; and

wherein:

series-tuned filters which are connected at the input to the same one of said alternating-current lines are connected at the output together and to one end of an add-on choke;

said add-on chokes being connected together at the other end; and

series-tuned filters which are connected at the input to different ones of said alternating-current lines are connected at the output to each other by way of alternating-current switches which produce a short circuit when said switches are actuated.

4,623,831

ROTOR POSITION SENSING APPARATUS FOR MOTORS

Keiji Sakamoto, and Yukio Toyozawa, both of Hachioji, Japan, assignors to Fanuc Ltd, Minamitsuru, Japan

PCT No. PCT/JP83/00380, § 371 Date Sep. 28, 1984, § 102(e) Date Sep. 28, 1984, PCT Pub. No. WO84/01821, PCT Pub. Date May 10, 1984

PCT Filed Oct. 26, 1983, Ser. No. 650,721

Claims priority, application Japan, Oct. 26, 1982, 57-187939

Int. Cl.[4] H02P *5/40;* **G08C** *19/28*

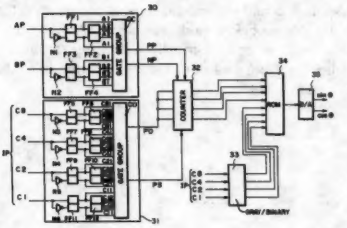
U.S. Cl. 318—799 **9 Claims**

1. A rotor position sensing apparatus for a rotor in a motor, said apparatus producing a digital position signal corresponding to a rotational position of the rotor, said apparatus comprising:

position code means for supplying a position code corresponding to the rotational position of the rotor;

rotation pulse means for supplying a rotation pulse whenever said rotor rotates by a predetermined amount;

a counter for counting the rotation pulse to produce a value; and



position indicating means for supplying the digital position signal with high order bits based on the position code and lower order bits based on the value counted by said counter.

4,623,832

SECONDARY BATTERY QUICK-CHARGING CIRCUIT

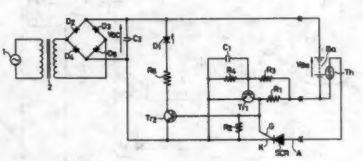
Toshiaki Fujiwara, Hiroshima, Japan, assignor to Ryobi Ltd., Fuchu, Japan

Filed Nov. 4, 1983, Ser. No. 548,728

Claims priority, application Japan, Nov. 12, 1982, 57-171727[U]

Int. Cl.[4] H02J *7/00*

U.S. Cl. 330—23 **8 Claims**



1. A battery charging circuit capable of fast charging and trickle charging, and adapted to be connected to a source of battery-charging voltage having a first terminal connected to a first terminal of a battery and a second terminal, the battery charging circuit comprising:

first control means having a silicon controlled rectifier with an anode connected to a second terminal of the battery, a cathode connected to the second terminal of the source of battery-charging voltage, said first control means having a first operation mode, corresponding to a conductive state for said silicon controlled rectifier, for enabling the fast charging of the battery by the voltage source and a second operation mode, corresponding to a non-conductive state for said silicon controlled rectifier, for preventing the fast charging of the battery;

second control means including a transistor connected to a gate of said silicon-controlled rectifier, to the battery and to the voltage source, for selectively preventing said silicon controlled rectifier from switching from said non-conductive state to said conductive state, and for trickle charging the battery when said silicon controlled rectifier of said first control means is in said non-conductive state; and

switching means, including a thermostat for sensing the battery temperature, coupled to the battery, to said transistor, and to said gate of said silicon controlled rectifier, said switching means being responsive to a pre-selected temperature of the battery corresponding to a fully charged state for switching said silicon controlled rectifier

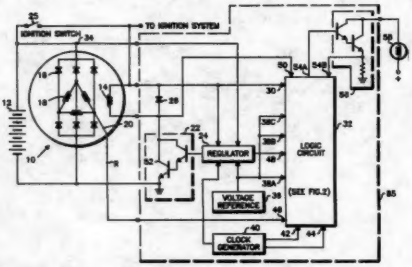
to said non-conductive state and for rendering said transistor of said second control means conductive in response to said thermostat sensing the temperature of the battery to be said pre-selected temperature and to maintain said transistor of said second control means conductive in response to said thermostat sensing the temperature of the battery to be below said pre-selected temperature to prevent said silicon controlled rectifier from thereafter switching from said non-conductive state to said conductive state.

4,623,833

ALTERNATOR SYSTEM MULTIFUNCTION FAULT DETECTOR

Arthur J. Edwards, Hoffman Estates, Ill., assignor to Motorola, Inc., Schaumbrug, Ill.

Filed Dec. 31, 1984, Ser. No. 687,603
Int. Cl.[4] H02J *7/14*
U.S. Cl. 322—28 **3 Claims**



1. A multifunction fault detector as for use in a vehicle alternator system and comprising:

first detector means for detecting that a first voltage derived from said alternator is within a predetermined range and providing a first detector output signal in response thereto, a voltage within said predetermined range indicating the presence of a possible fault in the system;

second detector means for detecting that the field coil of the alternator is being driven and providing a second detector output signal in response thereto, said second detector output signal indicating fault verification;

first logic means coupled to the first and second detector means for providing a logic output signal having a first value when said first and second detector output signals indicate that no fault or only a possible fault exists and providing output signal pulses having a second value when an actual fault is verified, said logic means including logic elements for broadening said signal pulses internal to said logic means;

second logic means coupled to the first logic means for providing a sustained output signal in response to said second valve of said first logic means output signal pulses; and

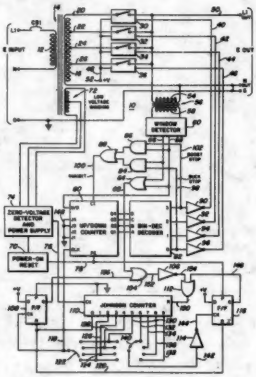
indicator means coupled to the second logic means for being enabled only by said sustained output signal.

4,623,834

DUAL PROGRAMMABLE RESPONSE TIME CONSTANTS FOR ELECTRONIC TAP SWITCHING LINE REGULATORS

August G. Klingbiel, Addison, and Thomas McCartney, Bannockburn, both of Ill., assignors to Oneac Corporation, Bannockburn, Ill.

Filed Jul. 6, 1984, Ser. No. 628,407
Int. Cl.[4] G05F *1/20*
U.S. Cl. 323—258 **11 Claims**



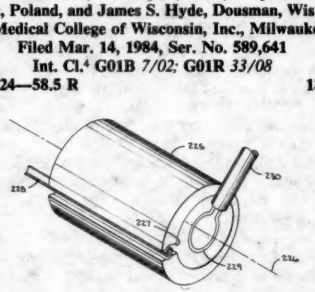
1. In a voltage regulator of the tap changing type for a load circuit, wherein individual time constants for the first and subsequent tap changing requests are controlled in a recycle time frame, comprising a transformer including a primary winding connected to an alternating current source and a secondary winding having a plurality of taps each connected to a different tap line, means for selectively connecting the load circuit to one of said tap lines, detector means for sensing a signal representative of the voltage of said load circuit and comparing it to preset upper and lower limits, means responsive to the sensed signal to produce sequential selection of adjacent taps, said last mentioned means discriminating between a first and second tap change whereby said first tap change occurs following a first predetermined delay, but said second successive tap change occurs following a second predetermined delay, where said first delay is less than said second delay thereby to avoid undesirable tap changing.

4,623,835

WEB THICKNESS SENSOR USING LOOP-GAP RESONATOR

Mehrdad Mehdizadeh, Centerport, N.Y.; Wojciech Froncisz, Krakow, Poland, and James S. Hyde, Dousman, Wis., assignors to Medical College of Wisconsin, Inc., Milwaukee, Wis.

Filed Mar. 14, 1984, Ser. No. 589,641
Int. Cl.[4] G01B *7/02;* G01R *33/08*
U.S. Cl. 324—58.5 R **13 Claims**



4. A web thickness sensor, the combination comprising:

a loop-gap resonator formed by two conductive elements which are spaced apart to provide a pair of gaps;

first means for feeding the web through the gaps of the loop-gap resonator;

second means for applying electromagnetic energy to the loop-gap resonator to produce an electric field across each gap;

third means coupled to the second means for measuring the resonant frequency of the loop-gap resonator as the web is fed through the loop-gap resonator gaps; and

fourth means coupled to the third means for converting the resonant frequency measurements to web thickness data.

4,623,836
SAMPLING METHOD FOR FAST POTENTIAL DETERMINATION IN ELECTRON BEAM MENSURATION

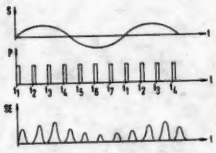
Jürgen Frosien, Ottobrunn, and Burkhard Lischke, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation of Ser. No. 382,778, May 27, 1982, abandoned. This application Jan. 22, 1985, Ser. No. 693,231

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1981, 3138992

Int. Cl.⁴ G01R *31/28*

U.S. Cl. 324—73 PC **5 Claims**



1. In a method of sampling a progression of a periodic signal for potential determination of the periodic signal at a measuring point in an integrated circuit, the improvement comprising the steps of:

during one period of the progression of the periodic signal, repeatedly sampling and therby measuring the progression of the periodic signal by producing secondary electron signals by applying an electron beam to the measuring point while gating the electron beam in synchronism with the periodic signal to produce electron beam pulses having a varying phase relation relative to the phase of the periodic signal and with a spacing of the electron beam pulses which is greater than the decay time of the secondary electron signals; and

storing the individual secondary electron signals in chronological succession.

4,623,837
AUDIO/VIDEO QUALITY MONITORING SYSTEM

Edward Efron, Irvine; James O. McPherson, Newport Beach, and Young B. Kim, Long Beach, all of Calif., assignors to Discovision Associates, Costa Mesa, Calif.

Division of Ser. No. 429,348, Sep. 30, 1982. This application Jun. 14, 1985, Ser. No. 733,360

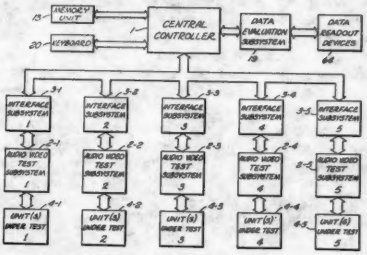
Int. Cl.⁴ G01R *23/16*

U.S. Cl. 324—77 R **3 Claims**

1. Apparatus for analyzing prescribed parameters of analog electrical signal, comprising:

(a) means for receiving a time segmented sequence of separate analog audio signals having a real time sequence rate in contiguous time segments; each said segment containing at least one of said signals;

(b) storage means coupled to said receiving means for accumulating said signals received in real time;



(c) memory recirculating means coupled to said storage means recirculating a selected one of said segments to produce a continuous representation of the signals contained in the selected segment; and

(d) signal analyzer means coupled to said storage means for receiving said continuous representation and performing measurements thereon.

4,623,838
ANALOG-DIGITAL CONVERSION CIRCUIT APPARATUS CONNECTABLE TO A MICROCOMPUTER FOR MEASURING ELECTRIC VOLTAGE AND CURRENT OF A VIBRATOR OF AN ULTRASONIC WAVE OSCILLATOR

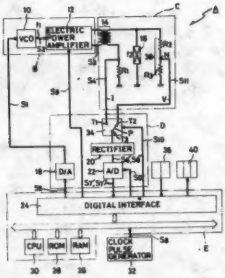
Masahiro Nakamura, Tokyo, Japan, assignor to Ohtake Works Company, Ltd., Tokyo, Japan

Division of Ser. No. 412,221, Aug. 27, 1982, Pat. No. 4,525,790. This application Apr. 16, 1985, Ser. No. 723,834

Claims priority, application Japan, Aug. 28, 1981, 56-134249

Int. Cl.⁴ G01R *21/06*

U.S. Cl. 324—142 **2 Claims**



1. An analog-digital conversion circuit apparatus connectable to a microcomputer for measuring electric voltage and current of a vibrator of an ultrasonic wave oscillator comprising a vibration system outputting an analog high-frequency wave voltage value signal and an analog high-frequency wave current value signal which acquired from an ultrasonic wave vibrator, and a conversion-transmission section outputting alternately to said microcomputer a digital high-frequency wave voltage value signal and a digital high frequency wave current value signal, said signal being converted by an analog-digital conversion after receiving said analog high-frequency wave voltage value signal and said analog high-frequency

wave current value signal alternately from said vibration system in response to a switching select timing command signal, said microcomputer further outputting said select timing command signal, said vibration system including a voltage inspection side and current inspection side, which are connected respectively through known fixed resistances and a potential divider to a conversion-transmission section, said conversion-transmission section comprising an analog multiplexer inputting said analog alternating high-frequency wave voltage value signal and said analog alternating high-frequency wave current value signal alternately from said vibration system on receipt of said switching select timing command signal from said microcomputer, a rectifier rectifying said analog alternating high-frequency wave voltage value signal and said analog alternating high-frequency wave current value signal for getting an analog direct high-frequency wave voltage value signal and an analog direct high-frequency wave current value signal, and an A/D converter converting said analog high-frequency wave direct current value signal and said analog direct high-frequency wave voltage value signal into said digital high-frequency wave current value signal and said digital high-frequency wave voltage value signal for output.

4,623,839

PROBE DEVICE FOR TESTING AN INTEGRATED CIRCUIT

Oliver R. Garretson, Woughton Park, and Gordon W. Watson, North Hill, both of United Kingdom, assignors to Angliatech Limited, Lancaster, England

Filed Sep. 15, 1983, Ser. No. 532,365

Claims priority, application United Kingdom, Sep. 17, 1982, 8226517

Int. Cl.⁴ G01R *1/073*

U.S. Cl. 324—158 P **17 Claims**

1. A probe device for testing an integrated circuit, comprising a dielectric ring of which one axial face is inclined to the axis in a conical manner, a plurality of elongaged resilient probes positioned on said inclined face with their contact tips radially within the aperture in the ring, and a second dielectric ring, having a generally complementary inclined face, positioned on the probes whereby the probes are retained between the two rings and the effective resilient length of each of said probe is determined by its point of engagement with said second ring.

4,623,840

ACTUATOR

Tadato Fujimura, Tokyo, and Tsutomu Fujii, Kawasaki, both of Japan, assignors to K.K. Tokyo Koki Seizosho and Institute of Science and Engineering Service, Inc., both of Tokyo, Japan, part interest to each

Filed Jul. 5, 1984, Ser. No. 627,905

Claims priority, application Japan, Jul. 5, 1983, 58-103503[U]

Int. Cl.⁴ G01B *7/14*

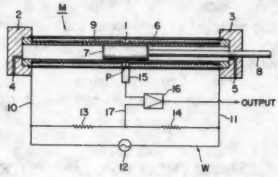
U.S. Cl. 324—208 **4 Claims**

1. A pressure fluid operated actuator comprising:

(a) a cylindrical body made of non-magnetic substance taken from the group consisting of carbon-fiber reinforced non-magnetic material, silicon-carbide, phenol-formaldehyde and boron-carbide and having pressure fluid inlet-outlet means at each end thereof;

(b) a piston with a piston rod thereon, said piston being slidable in the cylindrical body in substantially fluid tight relationship therewith so as to be movable under the pressure of pressure fluid fed thereinto through one of said inlet-outlet means and for pumping pressure fluid out of said cylindrical body through the other of said outlet means, said piston being of a material for functioning as a core;

(c) an induction coil directly on the outer peripheral surface of the cylindrical body; and



(d) circuit means connected to said coil for detecting the change of the inductance of the coil in response to the displacement of the piston.

4,623,841

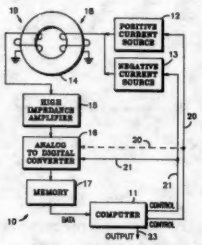
METHOD AND APPARATUS FOR MEASURING MAGNETIC PROPERTIES OF MAGNETIC MATERIALS USING POSITIVE AND NEGATIVE MAGNETIC SATURATION OF THE MATERIALS

Michael K. Stinson, Scottsdale; William L. Hines, Chandler, and David J. Hesser, Tempe, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 29, 1985, Ser. No. 718,040

Int. Cl.⁴ G01R *33/14;* G01N *27/72*

U.S. Cl. 324—223 **9 Claims**



1. A method of utilizing a testing device to test the magnetic properties of magnetic materials comprising the steps of:

providing a current pulse of a first polarity to a primary winding coupled to said magnetic material;

changing the magnetization of said magnetic material, resulting from said current pulse of said first polarity, driving said flux density of said magnetic material to a saturation level of said first polarity and then down to a residual level of said first polarity;

providing a controlled current pulse of a second polarity to said primary winding;

changing the magnetization of said magnetic material, resulting from said current pulse of said second polariy, driving a flux density from said residual level of said first polarity to a saturation level of said second polarity and then to a residual level of said second polarity;

measuring changes in a voltage across a secondary winding coupled to said magnetic material during said current pulse of said second polarity;

converting said measured voltages to digital signals;

storing said digital signals in a storage device;

providing a second controlled current pulse of said second polarity to said primary winding;

changing the magnetization of the magnetic material, resulting from said current pulse of said second polarity, driving

said flux density from said residual level of said second polarity to said saturation level of said second polarity and back to said residual level of said second polarity;

measuring changes in the voltage across said secondary winding during said second current pulse of said second polarity;

converting said measured voltages to digital signals;

storing said digital signal in said storage device; and

processing the data in said storage device to determine a magnetic property of said magnetic material.

4,623,842

MAGNETOMETER ARRAY WITH MAGNETIC FIELD SENSORS ON ELONGATE SUPPORT

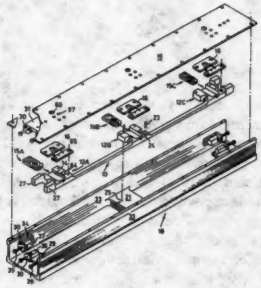
Malcolm E. Bell; John E. McFee; Henry W. Morewood, and Clayton G. Coffey, all of Medicine Hat, Canada, assignors to Her Majesty the Queen in right of Canada, Alberta, Canada

Filed Aug. 19, 1983, Ser. No. 524,779

Claims priority, application Canada, Aug. 27, 1982, 410334

Int. Cl.[4] G01R *33/04*

U.S. Cl. 324—245 **8 Claims**



1. Apparatus for sensing a magnetic field, comprising:

an elongate support;

an array of three magnetic field sensors mounted on said support in spaced apart relation along said elongate support at opposite end portions and an intermediate portion;

means for adjusting the position of two of said sensors independently of one another into at least substantially the same spatial orientation as the third one of said sensors including at least a pair of wedges acting on opposite surfaces of each said end portion for torsionally deflecting said end portions relative to said intermediate portion; and

means for deriving from said sensors electrical signals corresponding to the sensed magnetic field.

4,623,843

NMR IMAGING SYSTEM USING EXCITED REFERENCE COILS

Albert Macovski, 2505 Alpine Rd., Menlo Park, Calif. 94025

Filed Aug. 1, 1984, Ser. No. 636,733

Int. Cl.[4] G01R *33/20*

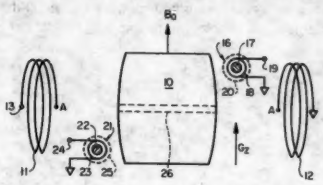
U.S. Cl. 324—309 **13 Claims**

1. In a method for deriving NMR measurements of an object in the presence of a temporally unstable magnetic field the steps of:

exciting nuclear spins in at least one volume outside the object using an rf excitation signal from a coil surrounding the reference volume;

receiving a signal from excited spins in the reference volume; and

processing the received signal to form object processing adjustment signals to use in conjunction with object measurements whereby temporal changes in the measurements will correspond to changes in the object processing adjustment signals.



4,623,844

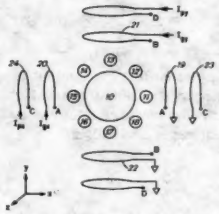
NMR INHOMOGENEITY COMPENSATION SYSTEM

Albert Macovski, 2505 Alpine Rd., Menlo Park, Calif. 94025

Filed Jul. 18, 1983, Ser. No. 514,578

Int. Cl.[4] G01R *33/20*

U.S. Cl. 324—320 **3 Claims**



1. In a method for correcting magnetic field inhomogeneities in an NMR system the steps of:

measuring the degree of homogeneity by measuring the duration of a received NMR signal following an excitation; and

generating magnetic fields which substantially cancel the inhomogeneities so as to maximize the measured homogeneity.

4,623,845

MULTI-CLOCK GENERATOR

Keiichiro Ide, Gyoda, Japan, assignor to Takeda Riken Kogyo Kabushikikaisha, Tokyo, Japan

Filed Feb. 12, 1985, Ser. No. 700,905

Claims priority, application Japan, Feb. 15, 1984, 59-27644

Int. Cl.[4] H03K *5/15, 5/156, 3/78*

U.S. Cl. 328—60 **17 Claims**

1. A multi-clock generator comprising:

leading edge detector means for detecting the leading edge of an input trigger clock;

trailing edge detector means for detecting the trailing edge of the input trigger clock;

first oscillator means, responsive to the detected output from the leading edge detector means to start oscillation, for providing respective output pulses;

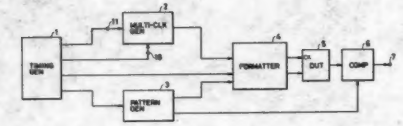
second oscillator means responsive to the output from the trailing edge detector means to start oscillation with the same frequency as that of the first oscillator means, for providing respective output pulses;

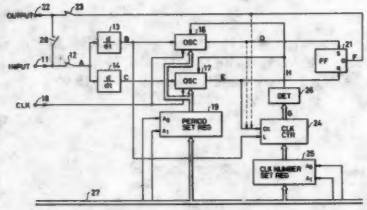
a flip-flop supplied with the outputs from the first and second oscillator means to be set by one of them and reset by the other, for producing multi-clock pulses as a respective output;

a clock counter for counting the number of said pulses from

a predetermined one of said first and second oscillation means and said flip-flop;

clock number setting means for setting therein data corresponding to a predetermined number of said pulses to be counted by said clock counter; and





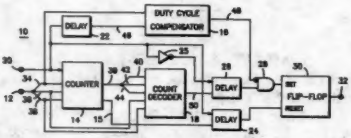
stop detecting means for providing an output for stopping the first and second oscillator means from oscillation upon detecting that the clock counter has counted said predetermined number of said pulses.

4,623,846

CONSTANT DUTY CYCLE, FREQUENCY PROGRAMMABLE CLOCK GENERATOR

Michael P. LaMacchia, Chandler, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 14, 1985, Ser. No. 701,727
Int. Cl.[4] H03K *3/01*
U.S. Cl. 328—61 **15 Claims**



11. A method of generating a variable frequency clock signal having an approximately fifty perent duty cycle, said method comprising the steps of:

counting master clock pulses between a value presented by a rate signal and an extreme value;

dividing the value presented by the rate signal by two and providing a result of said dividing step;

decoding the occurence in said counting step of a count equal to the result provided by said dividing step;

compensating for a truncation error occuring in said dividing step;

causing a memory element to exhibit a first logical state upon the occurence in said counting step of a terminal count value; and

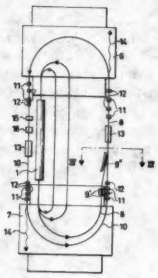
causing the memory element to exhibit a second logical state upon the completion of said decoding and compensating steps.

4,623,847

METHOD AND APPARATUS FOR STORING AN ENERGY-RICH ELECTRON BEAM IN A RACE-TRACK MICROTRON

Bengt Anderberg, Upsala, and Mikael Eriksson, Lund, both of Sweden, assignors to Instrument AB Scanditronix, Upsala, Sweden

Filed Jun. 15, 1984, Ser. No. 621,225
Claims priority, application Sweden, Jun. 17, 1983, 8303501
Int. Cl.[4] H05H *13/00, 13/04*
U.S. Cl. 328—234 **5 Claims**



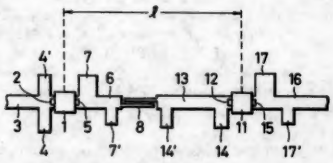
1. A race-track microtron for storing an energy-rich electron beam, and including a linear accelerator (**1**) arranged between two pairs of bending magnets (**6, 7**) such that said linear accelerator accelerates electrons and injects same into a magnetic field of one of said pairs of bending magnets, whereby said electrons travel in successive racetrack-like orbits of increasing width, in which each successive orbit has a common portion passing through said linear accelerator thereby repeatedly accelerating the electrons; a deflection magnet (**9'**) and a septum magnet (**9''**), which are arranged in connection with the orbit (**8**) having the greatest diameter and a kicker magnet (**16**), characterized by a storage ring (**10**), closed on itself, for accelerated electrons arranged outside the septum magnet (**9''**) and in the pole gap of each bending magnet (**6, 7**), said kicker magnet (**16**) being disposed in said storage ring (**10**) and in that two opposing pole surfaces in each bending magnet (**6, 7**) diverge outwardly, relative to the orbit (**8**) having the greatest diameter.

4,623,848

MICROWAVE PREAMPLIFIER

Hiroshi Saka, Osaka, and Toshihide Tanaka, Ikoma, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Jul. 16, 1984, Ser. No. 631,468
Claims priority, application Japan, Jul. 19, 1983, 58-132422; Jul. 19, 1983, 58-132423
Int. Cl.[4] H03F *3/60*
U.S. Cl. 330—286 **18 Claims**



13. In a multistage microwave preamplifier having at least a first amplifier stage and a second amplifier stage, the improvement comprising

(a) means for reducing an input VSWR to the multistage

preamplifier to a value lower than an input VSWR to the first amplifier alone,

(b) first impedance matching means for substantially matching an input impedance of the first amplifier stage to an antenna and providing a return loss having a slight decrease with frequency throughout an operating frequency band,

(c) second impedance matching means for the second amplifier stage, structured differently from said first impedance matching means for providing a return loss for the second amplifier stage alone decreasing substantially with frequency, thereby providing an input return loss characteristic to the combined first and second amplifier stages having a minimum at a central portion of the operating frequency band and having values substantially greater than the return loss for the first amplifier stage alone throughout the operating frequency band.

4,623,849

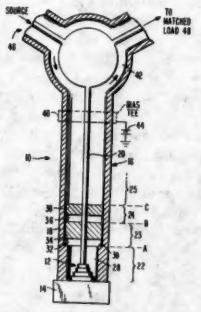
BROADBAND HIGH POWER IMPATT AMPLIFIER CIRCUIT

G. Conrad Dalman, and Charles A. Lee, both of Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Apr. 2, 1985, Ser. No. 719,087

Int. Cl.[4] H03F *3/60*

U.S. Cl. 330—287 **10 Claims**



1. A tunable microwave structure for amplification of a signal at a selected operating frequency and for suppression of subharmonic frequencies, comprising:

an IMPATT diode;

a first, quarter-wavelength coaxial transmission line section having an outer wall of a first inner diameter surrounding and in contact with a first end of said diode and an inner conductor in contact with a second end of said diode, said first section forming a parallel resonance with said diode at the operating frequency;

a second, odd quarter-wavelength coaxial transmission line line section adjoining said first transmission line section, the junction between said first and second sections defining a first reference plane, said second section having an outer wall of a second inner diameter, said second inner diameter being larger than said first inner diameter; and

adjustable tuning slug means in said second transmission line section for providing a second resonance with said diode at the operating frequency, whereby said microwave structure has multiple resonances at said operating frequency while providing an increased impedance to subharmonics of said operating frequency.

4,623,850

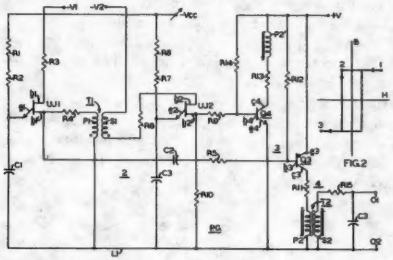
VITAL CODE GENERATING CIRCUIT

John O. G. Darrow, Murrysville, Pa., assignor to American Standard Inc., Swissvale, Pa.

Filed Mar. 27, 1984, Ser. No. 593,777

Int. Cl.[4] H03B *27/00*; H03L *7/00*; H03K *9/06*

U.S. Cl. 331—56 **20 Claims**



1. A vital code generator comprising, first and second relaxation oscillators, said first relaxation oscillator having a first timing circuit for causing the generation of pulses of a given frequency of oscillation, said second relaxation oscillator having a second timing circuit for causing the generation of pulses having substantially the same frequency of oscillation as the given frequency of oscillation, and a coincidence circuit connected to said first and second relaxation oscillators for producing an output signal having a frequency of oscillation corresponding to the given frequency of oscillation of the pulses of said first and second relaxation oscillators only when frequencies of oscillation of the pulses of said first and second relaxation oscillators are in coincidence.

4,623,851

VOLTAGE CONTROLLED OSCILLATOR USING FLIP-FLOP CONTROLLED SWITCHING CIRCUITS

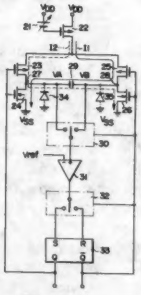
Shouji Abou, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Japan

Filed Oct. 18, 1985, Ser. No. 789,094

Claims priority, application Japan, Oct. 27, 1984, 59-226156

Int. Cl.[4] H03B *5/24*

U.S. Cl. 331—111 **17 Claims**



1. A voltage controlled oscillator comprising:

current producing means for producing current corresponding to an input voltage applied thereto;

at least one capacitor means for storing charges;

charge/discharge means connected to said current producing means and said capacitor means for alternately charging said capacitor means by the output current of said

current producing means and discharging said capacitor means;

comparing means coupled with a reference potential and said capacitor means for detecting potentials at two predetermined points of said capacitor means, said comparing means comparing said reference potential with one of said detected potentials, which is higher in absolute value than the other, to produce a signal corresponding to the comparison result;

switch means having two output terminals and connected to said comparing means for producing the output signal of said comparing means alternately at one of said two output terminals; and

a flip-flop connected to said switch means and said charge/discharge means, said flip-flop being set and reset by the output signal of said switch means to produce an oscillating signal by which the operation of said charge/discharge means is controlled.

4,623,852

VOLTAGE CONTROLLED OSCILLATOR HAVING FREQUENCY INDEPENDENT OF PROCESS PARAMETERS

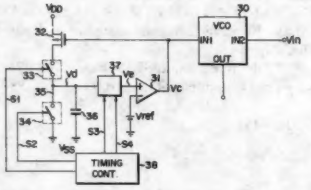
Shouji Abou, Kawasaki, and Keiko Chikaoka, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Japan

Filed Oct. 18, 1985, Ser. No. 789,102

Claims priority, application Japan, Oct. 31, 1984, 59-229229

Int. Cl.⁴ H03B *5/24*

U.S. Cl. 331—111 **10 Claims**



1. A voltage controlled oscillator for producing an output signal with a frequency corresponding to an input voltage applied thereto, said voltage controlled oscillator comprising:

an oscillating section having at least one first capacitor, and receiving first and second input voltages, said first capacitor being charged by a first current corresponding to said first input voltage, and said oscillator oscillating in response to a charged voltage across said first capacitor and said second input voltage;

a second capacitor;

means connected to said second capacitor for receipt of said first input voltage, and for charging said second capacitor for a predetermined time with a second current corresponding to said first input voltage; and

voltage control means connected to said second capacitor for receipt of a predetermined reference voltage, for detecting a maximum value of the charged voltage across said second capacitor, for comparing said detected maximum voltage with said reference voltage, and for controlling said first input voltage so that said maximum voltage and said reference voltage will be equal to each other.

4,623,853

SURFACE ACOUSTIC WAVE DISPERSIVE DELAY LINES HAVING A LASER IRRIDATED FOCUS AREA FOR ELIMINATING UNDESIRED SAW CONCENTRATIONS

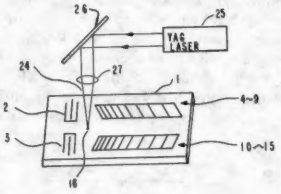
Takaya Watanabe, and Toshihiko Kitano, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jan. 27, 1984, Ser. No. 574,552

Claims priority, application Japan, Jan. 31, 1983, 58-14192

Int. Cl.⁴ H03H *9/44*

U.S. Cl. 333—151 **1 Claim**



1. A surface acoustic waves dispersive delay line comprising:

a piezoelectric substrate along which surface acoustic waves propagates;

an input transducer formed on said substrate for producing said surface acoustic waves in response to an input electrical signal;

a first reflector including a plurality of reflection gratings formed at different spacings on said substrate for reflecting the surface acoustic waves from said input transducer;

a second refector including a plurlaity of reflection gratings formed at different spacings on said substrate for reflecting the surface acoustic waves reflected by said first reflector;

an output transdcer for converting the surface acoustic waves reflected by said second reflector into an output electrical signal; and

means for eliminating a concentration of said surface acoustic waves which naturally tend to form at an area of focus responsive to reflections from said first and second reflectors, wherein said concentration eliminating means is formed by irradiating with a laser beam a focus area on the surface of the substrate at which the surface acoustic waves concentrate.

4,623,854

SWITCHED CAPACITOR FILTER

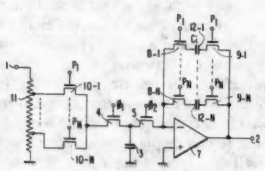
Yoshiaki Kuraishi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 20, 1985, Ser. No. 703,576

Claims priority, application Japan, Feb. 20, 1984, 59-29739

Int. Cl.⁴ H03H *17/00, 19/00*

U.S. Cl. 333—173 **6 Claims**



1. A switched capacitor filter comprising:

resistance divider means for producing N voltages by division of resistance in response to a time-division multiplex signal which is produced by time-division multiplexing N (integer not smaller than 2) signals;

first time-division switching means for selecting each of said N voltages of said resistance divider means on a time-division basis and in synchronism with the time-division multiplex signal;

sampling means for sampling output signals of said first switching means at a predetermined period;

a switched capacitor to be charged with an output signal of said sampling means;

N integrating capacitors equal in capacitance to each other;

a single operational amplifier; and

second time-division switching means for selectively interconnecting said N integrating capacitors between an output terminal and one input terminal of said operational amplifier on a time-division basis and in synchronism with the operation of said first time-division switching means.

4,623,855

SURFACE ACOUSTIC WAVE RESONATOR FILTER HAVING RANDOMLY INTERRUPTED REFLECTOR STRIPS

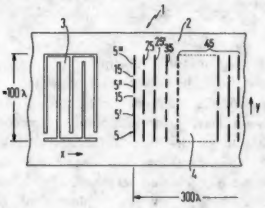
Wolf-Eckhart Bulst, Vaterstetten, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 13, 1984, Ser. No. 600,023

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1983, 3314725

Int. Cl.[4] H03H *9/25*

U.S. Cl. 333—195 **11 Claims**



1. A surface acoustic wave resonator filter, comprising: a substrate of piezoelectric material; a reflector structure comprising parallel metallization strips on the substrate; at least one interdigital transducer on the substrate, and in the substrate a wave propagation occurring between the transducer and the reflector structure in a direction perpendicular to the metallization strips; at least a plurality of the metallization strips being interrupted along a transverse direction to said wave propagation direction so as to create partial length strips spaced by gaps which are relatively short compared to a length of said partial length strips, the gaps being sufficient for electrical separation between adjacent partial length strips of a given strip; for at least a plurality of metallization strips of the reflector structure, a mathematically random distribution of a location of the interruptions is provided such that said partial length strips resulting from the interruptions of each of the metallization strips are randomly different with respect to the partial length strips of the other metallization strips corresponding to said random distribution.

4,623,856

INCREMENTALLY TUNED RF FILTER HAVING PIN DIODE SWITCHED LINES

Robert H. Bickley, Scottsdale, and Steven A. Murray, Mesa, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 11, 1984, Ser. No. 619,523

Int. Cl.[4] H01P *1/203*

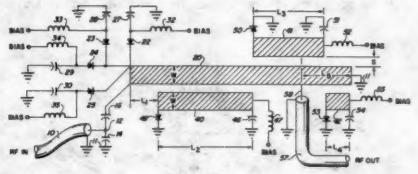
U.S. Cl. 333—205 **10 Claims**

9. An incrementally tuned RF filter comprising:

a first length of transmission line formed to have a predetermined inductance at a desired frequency range;

a capacitor coupled to said first length of transmission line to form a resonant circuit therewith;

a plurality of second lengths of transmission line mounted in RF coupled proximity with said first length; and



a plurality of PIN diodes, each independently operable into conducting and nonconducting modes, said PIN diodes being coupled to said first length of transmission line and said second lengths of transmission line to produce an RF filter with a different center frequency in each mode of each of said PIN diodes.

4,623,857

DIELECTRIC RESONATOR DEVICE

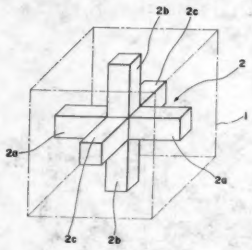
Toshio Nishikawa, Nagaokakyo; Youhei Ishikawa, Kyoto; Hidekazu Wada, and Koichi Takehara, both of Nagaokakyo, all of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Dec. 23, 1985, Ser. No. 812,235

Claims priority, application Japan, Dec. 28, 1984, 59-279203; May 31, 1985, 60-119491; May 31, 1985, 60-119492

Int. Cl.[4] H01P *7/10, 7/06*

U.S. Cl. 333—219 **10 Claims**



1. A dielectric resonator device which comprises dielectric resonators constituted by a rectangular cavity shield casing and a composite dielectric structure formed by three dielectric members intersecting at right angles with each other to be combined into one unit and disposed in said rectangular cavity shield casing to provide three resonances by TM_{110} modes or modified modes thereof which are utilized by said dielectric resonators, and an external coupling means for coupling said dielectric resonators with external circuits.

4,623,858

QUICK CONNECT WAVEGUIDE COUPLER

Ernest C. Montesanto, San Jose, and Joseph K. Martin, Boulder Creek, both of Calif., assignors to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Jan. 15, 1985, Ser. No. 691,684

Int. Cl.[4] H01P *1/04*

U.S. Cl. 333—255 **10 Claims**

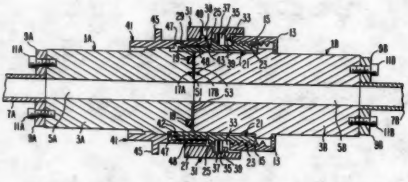
1. A coupler for coupling two sections of waveguide, each

section dimensioned to carry electromagnetic energy and terminating in a substantially flat end, said coupler comprising:

means for translationally aligning the two waveguide section ends as said ends are brought into intimate contact; and

surrounding one of the waveguide sections, freely rotatable means for engaging the two waveguide sections by rotating said engaging means less than 360°; wherein

the aligning means comprises first and second coaxial cylindrical shells;



the inner diameter of the first shell is slightly larger than the outer diameter of the second shell;

the first shell is fixedly mounted with respect to one of said waveguide sections;

the second shell is fixedly mounted with respect to the other of said waveguide sections;

the second shell fits closely within the first shell when the waveguide sections are in the coupled condition; and

each waveguide section end is recessed within one of said shells.

4,623,859

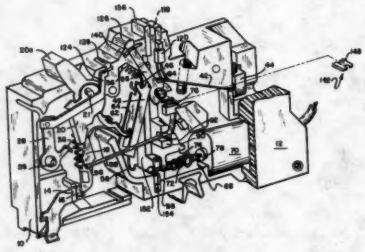
REMOTE CONTROL CIRCUIT BREAKER

Kenneth W. Erickson, and John H. Gilliland, both of Lincoln, Nebr., assignors to Square D Company, Palatine, Ill.

Filed Aug. 13, 1985, Ser. No. 765,402

Int. Cl.[4] H01H *75/00, 77/00, 83/00*

U.S. Cl. 335—14 **17 Claims**



1. A switch for connection to a circuit for remote opening and closing of the circuit, said switch comprising:

a first contact;

a second contact having a closed position wherein said second contact touches said first contact, said second contact having an open position wherein said second contact is positioned a distance from said first contact, said second contact being movable between the closed position and the open position;

a carrier connected to said second contact for moving said second contact between the closed position and the open position;

an operating handle connected to said carrier, said handle being manually movable to cause said carrier to move said second contact between the closed position and the open position;

a motor activated by a signal received from a remote location, said motor having a shaft that rotates upon the motor being activated; and

transfer means for transferring the motor shaft rotation to cause said carrier to move said second contact between the closed position and the open position independently of the movement of said handle.

4,623,860

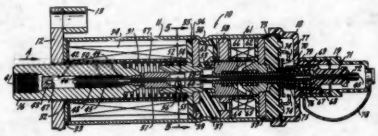
LATCHING SOLENOID MECHANISM

Keith F. Baker, Naperville; Richard M. Kowalski, Morton Grove, and Ralph E. Mishler, Deerfield, all of Ill., assignors to Synchro-Start Products, Inc., Skokie, Ill.

Filed Jun. 24, 1985, Ser. No. 747,923

Int. Cl.[4] H01H *9/20*

U.S. Cl. 335—170 **8 Claims**



1. In a latching solenoid of the kind comprising a main plunger axially movable between an unactuated position and an actuated position, a main coil energizable to drive the main plunger to its actuated position, a main return spring for driving the main plunger to its unactuated position, a latching mechanism for holding the main plunger in its actuated position when the main coil is de-energized, a latch release plunger axially movable through a given displacement from a normal position to a latch release position to release the latch means and allow the main plunger to return to its unactuated position, a latch spring urging the latch release plunger to its normal position, and an auxiliary coil energizable to drive the latch release plunger to its latch release position, an improved latch mechanism comprising:

a cylindrical ball race mounted on the main plunger and having a plurality of circumferentially distributed ball-receiving apertures;

a corresponding plurality of balls disposed in the ball race apertures;

first and second axially displaced fixed retainer means of different diameters, interconnected by a shoulder, defining limits of displacement of the balls in one radial direction for the unactuated and actuated positions, respectively, of the main plunger;

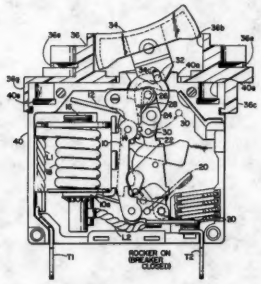
and third and fourth axially displaced retainer means of different diameters defining limits of displacement of the balls in the opposite radial direction when the balls engage the first and second retainer means, respectively, the fourth retainer means comprising a movable retainer connected to the latch release plunger;

the balls displacing the fourth retainer means as the main plunger nears its actuated position, through an axial clearance distance no larger than the given displacement for the latch release plunger but sufficient to allow the balls to ride along the shoulder into contact with the second retainer means and permitting the fourth retainer means to return to its original position, the balls engaging the shoulder to latch the main plunger in its actuated position until the latch release plunger is driven to its latch release position.

4,623,861
ROCKER ACTUATOR BRACKET ASSEMBLY FOR A SPLIT CASE CIRCUIT BREAKER

Bohdan Krasij, Avon, and Charles Mune, West Hartford, both of Conn., assignors to Carlingswitch, Inc., West Hartford, Conn.

Filed Oct. 1, 1985, Ser. No. 782,470
Int. Cl.[4] H01H *9/02, 13/04*
U.S. Cl. 335—202 **3 Claims**



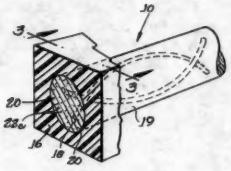
1. The combination comprising a circuit breaker and an actuator bracket assembly adapted to permit manual actuation and or resetting of the breaker, said circuit breaker having a housing with opposite end faces and a front face, said front face having a raised boss adapted to fit a small panel opening, said boss defining a slot, said circuit breaker having a mechanism in the housing, said mechanism including a pivoted actuator link having a free end portion provided in said slot, said link being pivotally provided for limited rotation on a fixed axis defined in the housing, and a cross pin provided parallel said link axis adjacent said link free end portion so that said cross pin also moves in said slot, said bracket assembly including a U-shaped adapter plate of one-piece plastic with a resilient integrally formed leg portion at one end and an opposite leg end portion which cooperates with said resilient leg portion to define a rearwardly open recess for receiving said circuit breaker front face as a result of bending said resilient leg portion, said plate leg portions defining inturned lips for entry in openings provided therefor in said circuit breaker end faces, said plate defining a generally rectangular outer boss to fit a larger panel opening than that adapted to accommodate said raised boss on the circuit breaker front face, said plate defining a rectangular recess inside said rectangular boss, and a rocker pivotably mounted in said rectangular recess, said rocker defining projecting integrally formed axle portions received in aligned openings provided for them in said rectangular boss defining said opening, said rocker having a depending yoke integrally formed therein and said yoke having laterally spaced legs that define downwardly open slots aligned with one another for receiving said cross pin end portions to provide pivotal motion of the actuator link generally opposite that of said rocker.

4,623,862
THERMALLY STABILIZED SUPERCONDUCTORS

Lawrence D. Woolf, Carlsbad, Calif., assignor to GA Technologies Inc., San Diego, Calif.

Filed Dec. 27, 1984, Ser. No. 686,981
Int. Cl.[4] H01F *7/22*
U.S. Cl. 335—216 **20 Claims**

1. A superconductor comprising at least one filament which is superconductive below a critical temperature and a cladding in which said filament is embedded, said cladding being normally conductive below said critical temperature, having a normal conductivity of at least about 10^6 $ohm^{-1}cm^{-1}$, said cladding comprising between about 0.1 and 100% by weight of a heat-absorbing material having an effective electron mass below said critical temperature that is at least about 25 times

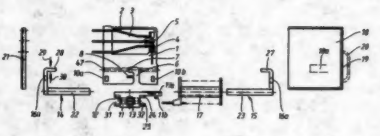


the bare electron mass, the balance of said cladding being a normally conductive metal.

4,623,863
POLARIZED ELECTROMAGNETIC RELAY WITH ANGLED YOKE ARRANGEMENT

Wolfgang Nestlen, Rottweil, and Arno Reger, Deilingen, both of Fed. Rep. of Germany, assignors to Hengstler GmbH Geschäftsbereich Haller-Relais, Wehingen, Fed. Rep. of Germany

Filed Jul. 2, 1984, Ser. No. 626,932
Claims priority, application Fed. Rep. of Germany, Jul. 6, 1983, 3324246
Int. Cl.[4] H01F *7/14*
U.S. Cl. 335—230 **3 Claims**



1. A polarized electro magnetic relay having an assumed identifying positional attitude on which the following relations as based, the relay including a housing having a lower part in which the operating component parts are located and including a spring carrier conforming to the lower part of the housing, said component parts including, an energizer coil having end faces, yokes having yoke plates abutting said end faces, the yokes being identical and symmetrical and the end plates thereof extending vertically and parallel to each other at right angles to the axis of the energizer coil, the yoke plates having free ends bent toward each other at right angles to form pole faces, and a swivelling rocker armature with a permanent magnet positioned in the region of said pole faces, and the rocker armature having anchor plates capable of being brought into contact engagement with said pole faces of the yokes,

characterized in that,

the yokes have shanks positioned at right angles to the yoke plates extending into the energizer coil and having overlapping contact engagement with each other throughout the full length of the energizer coil,

the spring carrier has opposite side elements between which said components are positioned, and the side elements having detents therein, and the rocker armature having lateral detent bolts engageable in said detents,

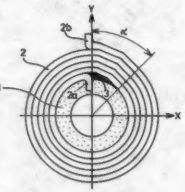
the spring carrier has side grooves and the pole faces have side shoulders engaging in said grooves in response to insertion of the yokes into the housing.

4,623,864

MAGNETIC FIELD PRODUCTION COIL FOR NUCLEAR MAGNETIC RESONANCE IMAGING APPARATUS

Yuji Inoue, and Hideto Iwaoka, both of Tokyo, Japan, assignors to Yokogawa Hokushin Electric Corporation and Yokogawa Medical Systems, Ltd., both of Tokyo, Japan

Filed Apr. 15, 1985, Ser. No. 723,142
Claims priority, application Japan, Apr. 26, 1984, 59-84763
Int. Cl.[4] H01F *5/00*
U.S. Cl. 335—299 3 Claims



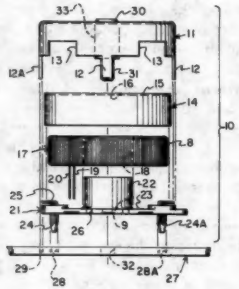
1. A magnetic field producing coil comprising a pair of inner coil assemblies and a pair of outer coil assemblies, coaxially arranged on a Z axis at predetermined intervals; wherein each of said coil assemblies comprises a plurality of pancake coil elements in layers; wherein each of said pancake coil elements has inserted therein a spacer configuration below a wire toward an end of one turn thereof, said configuration being appropriately adjusted, and the winding length of an end portion of each coil element is adjusted; wherein said four coil assemblies and each of said coil elements are arranged by rotating same around said Z axis such that the connecting wire between the end portion of each coil element and an initial portion of the following coil element and the connection wiring between each of said four coil assemblies are parallel to said Z axis; whereby magnetic field of high uniformity is obtained in an internal space of said magnetic field producing coil.

4,623,865

CURRENT TRANSFORMER ARRANGEMENT FOR GROUND FAULT CIRCUIT INTERRUPTERS

George W. Kiesel, Burlington; Paul T. Rajotte, Plainville, and LeeAnne Wambolt, Colchester, all of Conn., assignors to General Electric Company, New York, N.Y.

Filed May 9, 1985, Ser. No. 732,104
Int. Cl.[4] H01F *15/02, 27/30*
U.S. Cl. 336—65 10 Claims



1. A current transformer arrngement having an integrally arranged single turn primary winding comprising:

electrically insulated pedestal means supporting a secondary winding arranged around an apertured core;

conductor means extending from said secondary winding for electrical connection between said secondary winding and an electrical circuit;

metallic closure means arranged over said secondary winding and having a centrally disposed conductive element electrically connected with said metallic closure and extending from said closure through said apertured core providing a single turn primary winding in an electrical conductive path outside said secondary winding;

a plurality of integrally formed tabs extending from a perimeter of said closure, at least two of said tabs being folded under said pedestal means for support and at least one of said tabs extending through said electrically insulated pedestal the end of the said central conductive element extending from said closure means and said at least one of said tabs being connected to board mounted conductors to provide said single turn in said electrical conductive path;

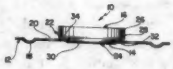
whereby said pedestal means provides electric insulation between said tabs and said centrally disposed conductive element.

4,623,866

CAP AND BRACKET ASSEMBLY FOR THERMOSTATIC SWITCH AND METHOD OF MANUFACTURING SAME

Samuel A. Hutchison, Warren, R.I., assignor to Elmwood Sensors, Inc., Pawtucket, R.I.

Filed Jul. 2, 1985, Ser. No. 751,372
Int. Cl.[4] H01H *37/04, 45/02*
U.S. Cl. 337—380 8 Claims



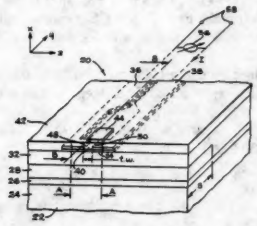
1. A cap and bracket assembly for a thermostatic switch comprising a metallic cup-shaped cap having a substantially circular main portion which defines an open end of said cap and a substantially circular end portion of reduced diameter which extends from said main portion and defines a closed end of said cap, said end portion comprising a terminal end wall and an end portion side wall which extends from said main portion to said terminal end wall, and a bracket made of a sheet metal and having an aperture therethrough, said end portion being received in said aperture in said bracket and being crimped to capture said bracket in intimate engagement between said main portion and said end portion, the extent of said end portion side wall from said main portion to said end portion terminal end wall being at least three times the thickness of the portion of said bracket which is adjacent said aperture therein.

4,623,867

PERMANENT MAGNET BIASED NARROW TRACK MAGNETORESISTIVE TRANSDUCER

Jerry R. Lundquist, San Jose, and H. Neal Bertram, Palo Alto, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Aug. 13, 1984, Ser. No. 640,432
Int. Cl.[4] H01L *43/00*
U.S. Cl. 338—32 R 10 Claims



1. A magnetoresistive transducer for detecting signals recorded on a magnetic medium, comprising:

a magnetoresistive element having an easy axis of magnetization;

a pair of conductor leads having confronting ends in contact with said element, said confronting ends being spaced from each-other to define a length of said element in said easy axis direction; and

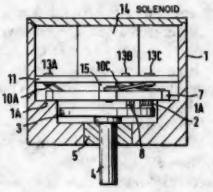
a substantially square shaped bias permanent magnet superposed with said magnetoresistive element for providing a substantially uniform magnetic bias field at a selected angle with respect to said easy axis of magnetization of the magnetoresistive element.

4,623,868

VARIABLE ELECTRICAL RESISTANCE DEVICE

Arnold Pitcher, Romford, England, assignor to Crystalate Electronics Limited, Kent, United Kingdom

Filed Jan. 8, 1985, Ser. No. 689,799
Claims priority, application United Kingdom, Jan. 10, 1984, 8400570; Nov. 1, 1984, 8427641
Int. Cl.[4] H01C *10/30*
U.S. Cl. 338—160 2 Claims



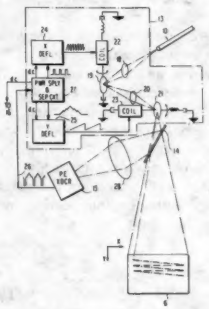
1. A variable electrical resistance device for monitoring displacement of a mechanical component, said device comprising: a housing; an electrically resistive track supported on or in said housing; an electrically conductive wiper moveably supported in said housing and adapted to traverse said resistive track, said wiper being adapted to be mechanically coupled to said external component to follow displacement thereof; first and second terminals electrically connected to ends of said track; a third terminal electrically connected to said wiper; said device being characterised in that means are provided to effect relative displacement of said wiper and said track away from and towards one another whereby contact between said wiper and said track may be broken, or the contact pressure therebetween reduced, during periods when said monitoring by said device is not required; said electrically resistive track being secured to a support, said support being moveable to effect displacement of said track away from and towards said wiper; said support for said track being mounted on one or more springs, or being spring biased, in such a way that the support is normally held with the track in contact with the wiper and is caused to be retracted and held against the action of the one or more springs or the spring bias, to break contact, or reduce the pressure of contact, between the wiper and the track; and a solenoid arrangement is used to retract and hold the support against the action of the one or more springs, or the spring bias, to break or reduce the pressure of the contact between the wiper and the track.

4,623,869

ELEVATOR DISPLAY SYSTEM WITH OPTICAL POWER TRANSMISSION

Akira Marubashi, Inazawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 628,788, Jul. 9, 1984, and a continuation of Ser. No. 632,927, Jul. 20, 1984. This application Feb. 3, 1986, Ser. No. 824,987
Claims priority, application Japan, Jul. 22, 1983, 58-134012; Jul. 22, 1983, 58-134013
Int. Cl.[4] B66B *3/00*
U.S. Cl. 340—19 R 7 Claims



1. A display system for an elevator, comprising:

(a) a laser light source (**11**) disposed in an elevator machine room (**2**);

(b) an optical modulator (**12**) disposed in the machine room for modulating a light beam from said source in accordance with image display information;

(c) an optical fiber (**10**) for transmitting the light beam from said optical modulator to an elevator boarding area site;

(d) an optical deflector (**13**) disposed at the boarding site for deflecting the display information modulated light beam transmitted through said optical fiber in a scanning mode;

(e) an optical beam splitter (**14**) disposed in an output path of said optical deflector;

(f) a photoelectric transducer (**15**) disposed to receive a portion of the light beam exiting said optical splitter for converting said portion into electrical power for said deflector and for devices at said boarding site; and

(g) a viewing screen (**6**) disposed to receive another portion of the light beam exiting said optical splitter to display said image information.

4,623,870

VEHICLE DISPLAY DEVICE

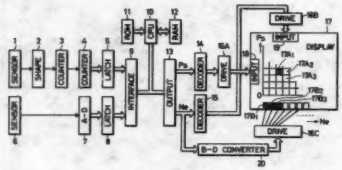
Shoichiro Irimajiri; Yutaka Kosuge, both of Saitama, and Shigehira Nakamura, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 30, 1982, Ser. No. 430,303
Claims priority, application Japan, Oct. 9, 1981, 56-160307
Int. Cl.[4] B60Q *1/00*
U.S. Cl. 340—52 F 4 Claims

1. A display system for a motor vehicle comprising: first and

second sensor means for sensing diverse vehicle operating parameters, said first sensor means generating a first input signal indicative of vehicle engine speed and said second sensor means generating a second input signal and comprising a sensor for sensing a throttle opening position; means receiving said first and second input signal for providing a first display signal indicative of vehicle engine speed and a second display signal indicative of vehicle engine power;

vehicle display means comprising; a plurality of display segments arranged in a matrix, a row of electrode strips arranged along an abscissa, being controllable with said first display signal and a row of electrode strips arranged



along an ordinate being controllable with said second display signal, whereby at the crossing portions of the rows of electrode strips activated by the display signals a display segment is illustrated; and

a memory storing an appropriate value for the vehicle engine power, wherein a value is read out from said memory in accordance with said first and second input signals for the engine speed and throttle opening, and this value is fed to said display means as a second display signal, and a curve image overlay on said display means indicative of characteristic curves showing the maximum power with respect to the actual engine speed for predetermined positions of the throttle.

4,623,871

RECEIVING APPARATUS

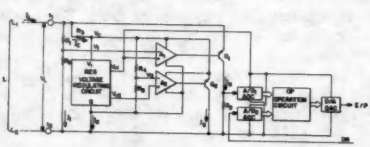
Shinichi Akano, Shibuya, Japan, assignor to Yamatake Honeywell, Tokyo, Japan

Filed May 22, 1985, Ser. No. 736,920

Claims priority, application Japan, Jun. 4, 1984, 59-113009; Sep. 12, 1984, 59-189707

Int. Cl.[4] H04M *1/16*

U.S. Cl. 340—310 A **20 Claims**



1. A receiving apparatus for receiving both power and a control signal over the same transmission line, the transmission line having first and second wires, said apparatus comprising:

a first terminal for connection to said first wire;

a second terminal for connection to said second wire;

a first variable impedance element;

a receiving impedance element;

first connecting means for connecting said first variable impedance element and said receiving impedance element in series and to said first and second terminals;

a second variable impedance element;

a series impedance element;

second connecting means for connecting said second variable impedance element and said series impedance element in series and to said first and second terminals; and,

control circuit means connected to said first variable impedance element for controlling said first variable impedance element to stabilize a transmission line voltage across said first and second terminals to a constant value and connected to said second variable impedance element for controlling said second variable impedance element to stabilize a current flowing through said series impedance element to a constant value.

4,623,872

CIRCUIT FOR CSD-CODING OF A BINARY NUMBER REPRESENTED IN TWO'S COMPLEMENT

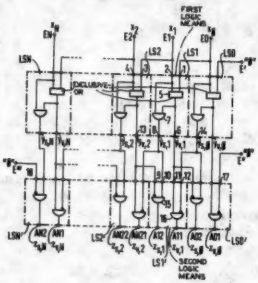
Alois Rainer, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 27, 1984, Ser. No. 625,035

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1983, 3335386

Int. Cl.[4] H03M *5/00*

U.S. Cl. 340—347 DD **6 Claims**



1. A circuit for CSD-coding of signals corresponding to a binary number being input represented in two's complement, comprising:

at an input side a plurality of first logic means each having first and second inputs and first and second outputs;

one of the first logic means having its first input connected to a given logic level and its second input connected to a signal corresponding to one of the bits of the binary number, a remainder of the first logic means each having their first and second inputs connected to signals corresponding to mutually adjacent binary digit pairs of the binary number being encoded;

each of said first logic means providing at its first output a signal corresponding to a value bit derived from its two inputs according to an exclusive OR function;

each of said first logic means deriving at its second output a signal corresponding to an operational sign bit comprising a logical "1" only when a signal corresponding to a higher order of the two bits at the two inputs comprises a logical "1" and a signal corresponding to a lower-order of the two bits comprises a logical "0";

a plurality of second logic means for providing at their respective first and second outputs signals corresponding to a CSD-coded bit combination of the input binary number signals;

each pair of directly adjacent ones of said second logic means deriving signals corresponding to a CSD-coded bit combination 0,1 at their outputs from an associated pair of first logic means to which they connect outputting signals corresponding to a bit combination "1, −1";

a signal corresponding to an operational sign bit at the second output of a higher-order of the associated pair of first logic means being "0" and a signal corresponding to its value bit at its first output being "1";

a signal corresponding to an operational sign bit at the second output of a lower-order of the associated pair of first logic means being "1" and a signal corresponding to its value bit at the first output being "1"; and

signals corresponding to bit combinations at the outputs of all of the remaining first logic means being transferred in

unaltered fashion to the outputs of the second logic means as the CSD-coded bit combinations.

4,623,873
DIGITAL PHASE DETECTOR

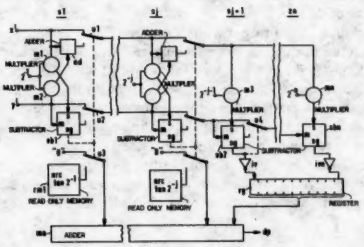
Soenke Mehrgardt, March-Neuershausen, Fed. Rep. of Germany, assignor to Deutsche ITT Industries GmbH, Freiburg, Fed. Rep. of Germany

Filed May 22, 1985, Ser. No. 736,945

Claims priority, application European Pat. Off., Jun. 6, 1984, 84106475.1

Int. Cl.[4] H03M *1/00*

U.S. Cl. 340—347 SY **2 Claims**



1. A digital phase detector comprising:

an analog-to-digital converter for converting analog signals to be detected into digital signals, said analog-to-digital converter being clocked by a clock signal;

a digital 90° phase shifter receiving said digital signals and forming quadrature signals;

a conditioning circuit for said digital signals and said quadrature signals, the output of said conditioning circuit providing corresponding digital quadrature signals (x', y') which lie in the first half quadrant of an x'- y' coordinate system;

n−1 like stages where n=the maximum number of predetermined bits of one of said quadrature signals (x', y'), each of said n−1 like stages comprising:

first and second input terminals,

first and second output terminals,

a first electronic transfer switch having a first input coupled to said first input terminal and an output coupled to said output terminal,

a second electronic transfer switch having a first input coupled to said second input terminal and an output coupled to said second output terminal,

first and second constant multipliers for multiplying an input by a factor 2^{-r} where r is the number of the stage from, said first constant multiplier having an input coupled to said first input terminal and having an output, said second constant multiplier having an input coupled to said second input terminal and having an output,

an adder having a first input coupled to said second constant multiplier output, a second input coupled to said first input terminal, and an output coupled to a second input of said first electronic transfer switch,

a first subtracter having a minuend input coupled to said second input terminal, a subtrahend input coupled to said first constant multiplier output, an output coupled to a second input of said second electronic transfer switch, and having a sign output,

a read only memory for arc tan 2^{-r}, where r is the number of the stage from 1 to n−1,

a stage output,

a third electronic transfer switch having a first input receiving a predetermined number, a second input coupled to the output of said read only memory, and an output coupled to said stage output,

the sign output of said subtracter being coupled to and controlling said first, second and third electronic transfer switches;

the first and second input terminals of the first one of said n−1 stages respectively receiving a first one of said quadrant signals (x') and a second one of said quadrant signals (y');

the first and second input terminals of the second and all subsequent ones of said n−1 like stages being coupled to the first and second output terminals, respectively, of the preceeding one of said n−1 stages;

an nth stage having first and second inut terminals coupled to the first and second output terminals, respectively, of the $n-1^{th}$ one of said n−1 stages, said n^{th} stage comprising:

an additional constant multiplier for multiplying an input by 2^{-n}, said additional constant multiplier having an input coupled to said n^{th} stage first input terminal,

an additional subtracter having a minuend input coupled to said n^{th} stage second input terminal, an input coupled to the output of said additional constant multiplier, and having a sign output,

an nth stage output terminal,

a read only memory for arc tan 2^{-n},

an additional electronic transfer switch having a first input receiving a predetermined number, a second input coupled to said additional read only memory, an output coupled to said n^{th} stage output terminal, and a control input coupled to said additional subtracter sign output; and

a multiple input adder having inputs coupled to said stage outputs and said n^{th} stage output, the output of said multiple input adder providing the digital phase-detected signal of the first half quadrant of said coordinate system.

4,623,874
WORD LENGTH CONVERTER

Donald E. Thoma, Mt. Prospect, Ill., assignor to GTE Communication Systems Corp., Northlake, Ill.

Filed Nov. 2, 1984, Ser. No. 667,662

Int. Cl.[4] H03K *13/02*

U.S. Cl. 340—347 DD **20 Claims**

10. A word length converter for use in transferring data in a word format of a first length to a first data processing unit from a second data processing unit utilizing a word format of a second length, said converter including:

a buffer means connected between said first and said second units, and including,

a read register including a plurality of inputs connected to said second unit, and

a converter control, said converter control comprising:

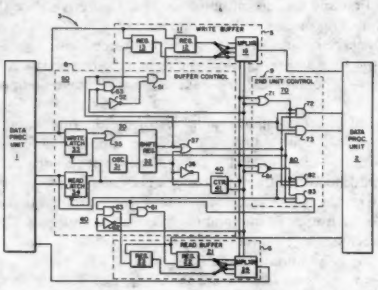
a buffer control connected between said first unit and said buffer means and including,

a read register control connected between said first unit and said read register; and

a read control connected to said read register control, said buffer control and said second unit, said buffer control in response to receipt of a plurality of mode signals from said first unit, generating a plurality of first control signals to operate said buffer means to transmit said data in said first length word format to said first unit, said read control operated in response to receipt of a plurality of second control signals from said buffer control to extend a plurality of command signals to said second unit to operate said second unit to transmit said data in said second length word format to said read register inputs, said read register control responsive to said mode signals from said first unit and a plurality of third control signals from said read control to extend a plurality of store signals to said read register, said read register operated in response to said store signals to accept said data from said second unit and, said read

control further operated to extend said plurality of third control signals to said read register control for use in operating said read register.

11. A converter, as claimed in claim **10** wherein: said read register includes a first and a second portion both said register portions including a plurality of inputs connected to said second unit, and said register control includes a first portion control connected to said read register first portion and a

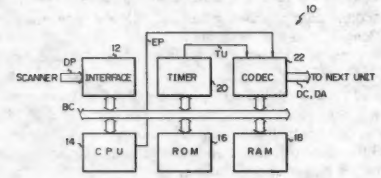


second portion control connected to said read register second portion, both said portion controls connected to said first unit and operated in response to predetermined ones of said mode signals from said first unit to extend a corresponsing one of said store signals to corresponding portions of said read register, said read register first and second portions each responsive to said corresponding store signals to accept data from said second unit.

4,623,875
CODING DEVICE FOR IMAGE PROCESSING APPARATUS

Yoshinori Wada, Miura, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Mar. 22, 1985, Ser. No. 714,872
Claims priority, application Japan, Mar. 27, 1984, 59-57399
Int. Cl.[4] H04N *1/40, 1/00*
U.S. Cl. 340—347 DD **10 Claims**



1. A coding device comprising:

input means for inputting non-coded data;

memory means for momentarily storing the inputted non-coded data;

encoder means for run-length coding the non-coded data by reading the non-coded data one unit block at a time out of said memory means;

timer means producing a timing signal after a predetermined fixed time; and

selection control means for monitoring and comparing said predetermined period of time with the period of time consumed by said encoder mean in coding a unit block of data and, based on a result of the comparison, determining which of coded data and non-coded data is to be outputted for the next and subsequent unit blocks of the non-coded data.

4,623,876
ALARM SYSTEM TO TRANSMIT DETECTION INFORMATION DETECTED BY A DETECTOR DUE TO A RADIO SYSTEM

Hiroshi Shima, and Hiroshi Honma, both of Tokyo, Japan, assignors to Hochiki Corporation, Tokyo, Japan

Filed Jan. 23, 1985, Ser. No. 694,168
Claims priority, application Japan, Jan. 27, 1984, 59-14025
Int. Cl.[4] G08B *1/08;* **H04Q** *7/00*
U.S. Cl. 340—539 **7 Claims**

1. An alarm system for transmitting detection information detected by a detector from a transmitter to a receiver via a radio system and thereby outputting an alarm,

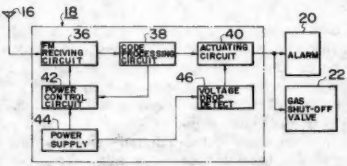
wherein said transmitter comprises:

an abonormality detecting means for detecting an abnormal condition;

and a transmitting means connected to said abnormality detecting means for continuously transmitting a transmission signal of one word including at least detection information and address information a plurality of times for a constant transmission time interval when a detection output of said abnormality detecting means is obtained;

and wherein said receiver comprises:

a power control means for setting a receiving window time by intermittently supplying power to a receiving circuit at a period of a constant receiving idle time;



a reception processing means which, when a coincidence of a self address is determined from a reception word signal derived from the receiving operation within said receiving window time, elongates the receiving window time set by said power control means for a constant time period from the determination of said address coincidence until the coincidence of the self address is determined on the basis of the next reception word signal, and

an alarm output means for outputting an alarm signal on the basis of the detection information included in the last reception word signal received due to the elongation of the receiving window time by said reception processing means.

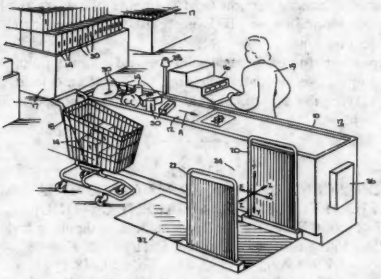
4,623,877
METHOD AND APPARATUS FOR DETECTION OF TARGETS IN AN INTERROGATION ZONE

Pierre F. Buckens, Louvain-La-Neuve, Belgium, assignor to Knogo Corporation, Hicksville, N.Y.

Filed Jun. 30, 1983, Ser. No. 509,292
Int. Cl.[4] G08B *13/24*
U.S. Cl. 340—572 **62 Claims**

1. A method of detecting the presence of targets in the interrogation zone of an alternating magnetic field type theft detection apparatus, said targets comprising elements capable, when in said interrogation zone, of being driven alternately into and out of magnetic saturation by an alternating magnetic interrogation field in said zone, said method comprising the steps of generating in said interrogation zone an alternating magnetic interrogation field at an interrogation frequency and at an amplitude sufficient to drive targets in said zone alternately into and out of magnetic saturation so that the targets disturb said alternating magnetic interrogation field in a manner to produce alternating magnetic fields at frequencies which

are harmonics of the frequency of said alternating magnetic interrogation field, detecting the alternating magnetic fields in said interrogation zone and producing a corresponding first electrical signal whose amplitude varies according to the intensity of said alternating magnetic fields in said interrogation zone, dividing said first electrical signal according to a series of successive time increments, several of which occur during



each cycle of said interrogation frequency, comparing the amplitudes of the first electrical signals which occur during each of a first group of said time increments with the amplitudes of the first electrical signals which occur during corresponding ones of a second group of said time increments, each of said time increments being synchronous with said interrogation frequency, thereby to produce an alarm signal and actuating an alarm in response to said alarm signal.

4,623,878

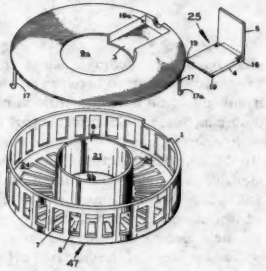
CHRISTMAS TREE MOUNTED SMOKE DETECTOR

Henry Schoenwetter, P.O. Box 16144, Plantation, Fla. 33318

Filed Jun. 28, 1982, Ser. No. 393,103

Int. Cl.[4] G08B *17/10, 21/00*

U.S. Cl. 340—628 **4 Claims**



1. A smoke detector for releasaby mounting on the top stem of a Christmas tree comprising:

a hollow toroidal enclosure having a generally horizontal annular bottom wall with a central opening, a generally horizontal annular top wall with a central opening aligned with said opening in the bottom wall, an annular inner wall extending up from said bottom wall to said top wall at said central openings therein for receiving the top stem of a Christmas tree, and an annular outer wall extending up from the outer periphery of said bottom wall to the outer periphery of said top wall, said toroidal enclosure having additional openings therein;

a smoke sensor inside said toroidal enclosure operatively arranged to detect smoke passing through said additional openings;

and audible signalling means inside said toroidal enclosure operatively connected to said smoke sensor to produce an audible alarm signal in response to the detection of smoke by said smoke sensor.

4,623,879

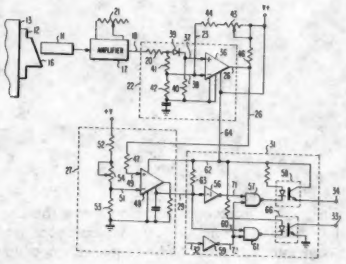
SYSTEM FOR VERIFYING THE POSITION OF A MOVABLE TABLE

John W. Woestman, Lancaster, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Aug. 16, 1985, Ser. No. 766,281

Int. Cl.[4] G08B *21/00*

U.S. Cl. 340—686 **10 Claims**



1. A system for verifying the positioning, within a distance range, of a movable table at a desired location, comprising:

sensor means arranged in the proximity of said table, said sensor means providing a distance signal the level of which is proportional to the distance said table has moved;

multi-input terminal comparator means, one input terminal of said comparator means receiving said distance signal through a fixed impedance means, and another input terminal of said comparator means receiving said distance signal through undirectional conduction means having an impedance which varies in accordance with the input signal, whereby said comparator means provides a steep output pulse having a width related to said distance range;

control pulse generator means responsive to said output pulse, whereby said control pulse generator means provides a control pulse during the reception of said output pulse; and

logic means responsive to said control pulse and to a table-at-home signal for providing a ready signal when said object is within said distance range and an alarm signal when said object is outside said distance range.

4,623,880

GRAPHICS DISPLAY SYSTEM AND METHOD HAVING IMPROVED CLIPPING TECHNIQUE

Jack E. Bresenham; Adrian C. Gay, both of Hants, and John P. Richards, Twickenham, all of United Kingdom, assignors to International Business Machines, Armonk, N.Y.

Filed Dec. 28, 1983, Ser. No. 566,245

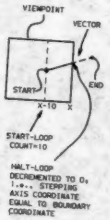
Claims priority, application European Pat. Off., Dec. 30, 1982, 82306987.7

Int. Cl.[4] G09G *1/10*

U.S. Cl. 340—723 **7 Claims**

1. In a graphics display system of the kind having a refresh raster display device, a line clipping mechanism for clipping line primitives for viewing in a selected rectangular viewport having horizontal and vertical edges parallel to the X and Y axes respectively of the display area of the display device, and a vector-to-raster converter for converting the clipped lines to patterns of dicrete pels in a refresh buffer, the vector-to-raster converter including an incremental line drawing mechanism responsive to line information supplied by the clipping mechanism to draw the line starting at one endpoint and proceeding towards the other, said mechanism being of the kind in which successive incrementally displaced pairs of X,Y disply coordinates are generated by performing one iteration of an interactive computation in respect of each consecutive coordinate

unit along a given stepping axis of the coordinate system, the improvement wherein for at least some lines of a kind which have a first endpoint in the viewport and the second endpoint outside the viewport the vector-to-raster converter is arranged to start the line drawing mechanism at the first endpoint and automatically halt the line drawing mechanism, irrespective of



the coordinates of the second endpoint, when the currently generated coordinate along the display axis normal to the viewport edge intersected by the line equals the coordinate of the viewport edge along the same axis, whereby the need for the clipping mechanism to calculate the intersection point of the line with the said viewport edge is avoided.

4,623,881

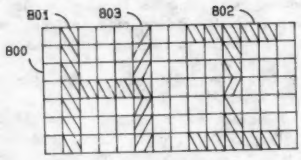
METHOD AND APPARATUS FOR INCREASING THE NUMBER OF CHARACTERS PER LINE IN A DIGITALLY GENERATED DISPLAY ON A LIMITED BANDWIDTH RASTER SCANNED DEVICE

Mark G. Arnold, 1400 Grand Ave., Laramie, Wyo. 82070

Filed Dec. 29, 1983, Ser. No. 566,722

Int. Cl.[4] G09G *1/14*

U.S. Cl. 340—750 **19 Claims**



1. A process for displaying an increased number of symbols per horizontal line on a display screen capable of displaying an image composed of a first field and a second field, whereby said first field is composed of a first plurality of raster lines created by patterns of active and inactive pixels, and said second field is composed of a second plurality of raster lines created by patterns of active and inactive pixels, comprising the steps of:

selecting a horizontal line of said display screen;

first classifying as being of a first kind every other single or plurality of contiguous active pixels of said image that are to be displayed on said horizontal line;

second classifying as being of a second kind those single or pluralities of contiguous active pixels of said image that are to be displayed on said horizontal line, and that are not classified by said first classifying step;

repeating, for each horizontal line of said display screen, said steps of selecting, first classifying and second classifying; and

producing said image on said display screen including the steps of:

sequentially selecting in said first field a raster line,

displaying in said first field active pixels of said raster line classified as being of said first kind,

blanking in said first field segments of said raster line corresponding to pixels not classified as being of said first kind,

repeating, for each raster line in said first field, said steps of sequentially selecting in said first field, displaying in said first field, and blanking in said first field,

sequentially selecting in said second field a raster line,

displaying in said second field active pixels of said raster line classified as being of said second kind,

blanking in said second field segments of said raster line corresponding to pixels not classified as being of said second kind,

repeating, for each raster line in said second field, said steps of sequentially selecting in said second field, displaying in said second field, and blanking in said second field.

4,623,882

FLUORESCENT DISPLAY ARRANGEMENT HAVING FIELD ELECTRODE ADJACENT CATHODE

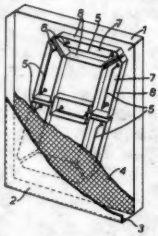
Ralph D. Nixon, Braintree, United Kingdom, assignor to English Electric Valve Company Limited, Chelmsford, England

Filed Aug. 4, 1983, Ser. No. 520,248

Claims priority, application United Kingdom, Aug. 6, 1982, 8222740

Int. Cl.[4] G09G *3/12*

U.S. Cl. 340—760 **11 Claims**



1. A display arrangement including a sealed envelope containing a mesh electrode positioned between an electron emissive cathode arranged to emit a divergent flood beam of electrons and a fluorescent screen which forms part of the envelope so that the flood beam falls upon a predetermined area of said mesh electrode; and field electrode means positioned so that the cathode is between at least a part of said means and said mesh electrode, the field electrode means being positioned closely adjacent to the cathode such that the potential difference between the field electrode means and the cathode influences the strength and polarity of the electric field in which the cathode is situated, at least one of said electrode means and said cathode having at least two selectable voltage potentials, whereby the potential difference can be altered between two values to determine respectively whether or not electrons are able to reach said mesh electrode and then said screen to cause it to fluoresce.

4,623,883

AUTOMATIC COMMUNICATIONS SWITCH

Noel R. Konen, Easley, S.C., assignor to NCR Corporation, Dayton, Ohio

Filed Dec. 10, 1984, Ser. No. 680,118

Int. Cl.[4] H04Q *1/00*

U.S. Cl. 340—825.01 **5 Claims**

1. A system comprising:

a primary terminal having primary and secondary communication lines;

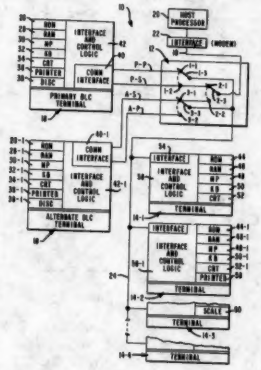
an alternate terminal having primary and secondary communication lines;

a cluster of terminals having communication lines to interconnect said cluster of terminals;

a switching circuit being operatively coupled to said primary and alternate terminals and said communication lines to said cluster of terminals; said switching circuit also being switchable between first and second states;

said switching circuit having first means for coupling said primary communication lines of said primary terminal with said communication lines to said cluster of terminals when said switching circuit is in said first state and also for coupling said secondary communication lines of said primary terminal with said communication lines to said cluster of terminals when said switching circuit is in said second state;

means for sensing when said primary terminal is inoperative; and



said switching circuit also having means for switching automatically said switching circuit from said first state to said second state when said sensing means senses that said primary terminal is inoperative;

said sensing means comprising means coupled to said secondary communication lines of said alternate terminal to check for polling signals by said primary terminal and in which a lack of said polling signals is indicative of said primary terminal being inoperative;

said switching means comprising:

means associated with said alternate terminal for producing polling signals on said primary communication lines of said alternate terminal; and

actuating means responsive to said polling signals on said primary communication lines of said alternate terminal to switch said switching circuit from said first state to said second state.

4,623,884

TRANSMISSION LINE CONTROL SYSTEM WITH BY-PASS CONTROL

Susumu Ihara, and Shinji Tsunoda, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jul. 12, 1984, Ser. No. 630,304

Claims priority, application Japan, Aug. 11, 1983, 58-147408

Int. Cl.[4] H04J *1/16*

U.S. Cl. 340—825.05 **6 Claims**

1. A transmission line control system for controlling a transmission line having connected threto a plurality of terminal communication, comprising:

a main transmission line for connecting said terminal communication apparatuses continuously;

an input side subsidiary transmission line for connecting an input side section of said main transmission line with said terminal communication apparatus;

an output side subsidiary transmission line for connecting an output side section of said main transmission line with said terminal communication apparatus;

a by-pass for connecting the input side section of said main transmission line with the output side section thereof;

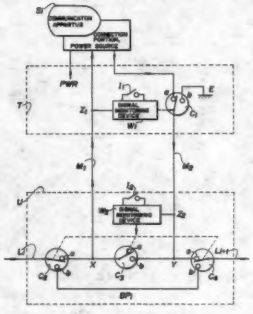
a first change-over switch provided on said output side subsidiary transmission line for connecting said subsidiary transmission line alternatively with the output of said terminal communication apparatus or the earth;

a second change-over switch provided on an input side section of said main transmission line, for connecting the input side section of said main transmission line alternatively with said by-pass or said input side subsidiary transmission line;

a third change-over switch provided on a section of said main transmission line between the input side subsidiary transmission line and the output side subsidiary transmission line, for opening and closing the connection between the input side and the output side subsidiary transmission lines;

a fourth change-over switch provided on an output side section of said main transmission line, for connecting the output side section of said main transmission line alternatively with said by-pass or said output side subsidiary transmission line;

a first signal monitoring device for monitoring the data signal of said input side subsidiary transmission line and changing said first change-over switch when the data



signal has been received continuously for a first length of time "T on 1", or for a second length of time "T hold 1" after a power source of the terminal for supplying power to said terminal communication apparatus was turned on and further for controlling the first change over switch to connect the output side subsidiary transmission line with earth when the data signal is interrupted for a length of time OFF 1 continuously; and

a second signal monitoring device for monitoring the data signal of said output side subsidiary transmission line to change said second, third and fourth change-over switches so as to connect the input side section of said main transmission line with said input side subsidiary transmission line and said output side subsidiary transmission line with the output side section of said main transmission line and to disconnect said input side subsidiary transmission line from said output side subsidiary transmission line when receiving the data signal for a third length of time "T on 2" continuously, and to change said second, third and fourth change-over switches so as to connect the input side section and the output side section of said main transmission line with said by-pass and to connect said input side and the output side subsidiary transmission lines with each other when receiving no data signal for a fourth length of time "T off 2" continuously, in which the constants deciding the lengths of time of operation of said first

and second signal monitoring devices are determined to satisfy the following inequalities:

T on 2>T hold 1>T on 1,

T off 1>T off 2>Tw

where Tw denotes the largest length of time of continuous absence of signal in normal operation.

4,623,885

METHOD AND ARRANGEMENT FOR DISTRIBUTION OF SEND PERMISSION TO TERMINALS IN A TELECOMMUNICATION NETWORK

Eric A. Bladh, Täby, and Lars Åke A. Lindholm, Enskede, both of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

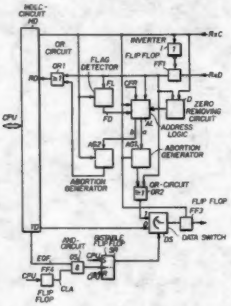
PCT No. PCT/SE82/00153, § 371 Date Dec. 15, 1982, § 102(e) Date Dec. 15, 1982, PCT Pub. No. WO82/04145, PCT Pub. Date Nov. 25, 1982

PCT Filed May 6, 1982, Ser. No. 456,028

Claims priority, application Sweden, May 14, 1981, 8103041

Int. Cl.[4] H04Q *9/00*; H04J *3/08*

U.S. Cl. 340—825.005 **2 Claims**



1. A telecommunications network utilizing HDLC format wherein a signal word frame includes a send permission byte in a particular byte position thereof comprising: a ring bus, through which at least said signal word frame circulates and a plurality of terminals connected to said ring bus, each of said terminals comprising a terminal processor which receives information from said ring bus and transmits information to said ring bus, said terminal processor indicating when desiring to transmit information and only transmitting information after receipt of a send permission byte, and a loop logic means interfacing said terminal processor with said ring bus, said loop logic means comprising:

means for retransmitting received signal word frames having an input connected to said ring bus,

means for comparing the byte in said particular byte position of received signal word frames with a stored byte representing a send permission and upon equality emitting a send-permission-received signal,

means responsive to said terminal processor and to the occurrence of said send-permission-received signal for generating a first control signal when said terminal processor desires to transmit information or for generating a second control signal when said terminal processor does not desire to send information,

first abortion generator means responsive to said first control signal for changing the send permission byte in the received signal word frame to an innocuous byte during the retransmission of said frame to said ring bus,

second abortion generator means responsive to said second control signal for changing the send permission byte in the received signal word to an innocuous byte during the transmission of said frame to said terminal processor,

switching means having a first input connected to said terminal processor for receiving information therefrom, a second input connected to said means for retransmitting for receiving information therefrom and an output means connected to said ring bus for transmitting information thereto,

and control means responsive to said terminal processor for controlling the state of said switch means.

4,623,886

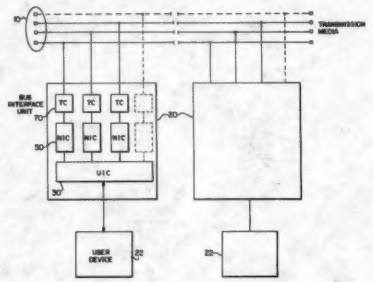
PRIORITIZED DATA PACKET COMMUNICATION

William D. Livingston, Falls Church, Va., assignor to E-Systems, Inc., Dallas, Tex.

Filed Jan. 21, 1983, Ser. No. 459,894

Int. Cl.[4] H04Q *9/00*; H04J *6/00*

U.S. Cl. 340—825.5 **8 Claims**



1. In a data communication system comprising a plurality of transmission media connected by a plurality of bus interface units to a plurality of communicating devices, the improvement wherein each of said bus interface units dynamically determines which of said transmission media is used for transmitting information by each of said communicating devices.

4,623,887

RECONFIGURABLE REMOTE CONTROL

Kenneth B. Welles, II, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 15, 1984, Ser. No. 610,377

Int. Cl.[4] G08C *19/00*; H04N *5/44*

U.S. Cl. 340—825.57 **10 Claims**

1. For use with a plurality of remotely controlled products or appliances each of which is controllable with one or more signals transmitted from an associated remote control transmitter, a reconfigurable remote control transmitter for emulating the remote control transmitters of said plurality of remotely controlled products or appliances comprising:

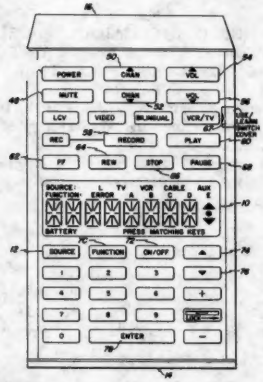
receiver means for receiving signals transmitted from a remote control transmitter to be emulated during a learning mode, said signals being comprised of bursts of pulses separated by pauses;

prompting means;

microprocessor means connected to receive the output of said receiver means and coupled to said prompting means for prompting a user to initiate transmission of a signal from the remote control transmitter to be emulated and counting the numbr of pulses in each burst of pulses and timing the duration of each pause of a transmission, said microprocessor means being programmed to categorize the pulse bursts and pauses and generate a compressed code for each signal provided by the remote control transmitter to be emulated;

memory means addressed by said microprocessor means for storing said compressed codes; and

transmitter means controlled by said microprocessor means in an emulation mode for transmitting a coded signal or



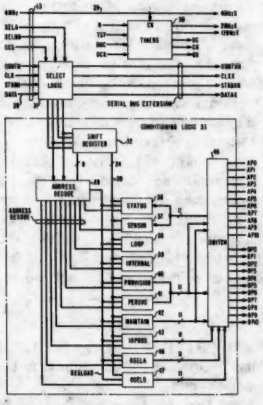
controlling a selected remotely controlled product or appliance, said microprocessor means being further programmed to recall from said memory means a desired compressed code, expand said code and cause said transmitter means to transmit the coded signal.

4,623,888

MULTI-FUNCTION CONTROL INTERFACE CIRCUIT

David L. Waring, Convent Station, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 8, 1983, Ser. No. 559,354
Int. Cl.[4] H04Q *11/00*; H04J *3/00*
U.S. Cl. 340—826 **17 Claims**



1. A circuit for electrically interfacing a signal bus with a plurality of electric circuit devices, the circuit comprising

first connections for receiving signals from said bus,

second connections for presenting signals to said devices,

means for coupling signals between said first and second connections, said coupling means comprising

plural multistage registers, at least a first portion of said registers being provided for representing predetermined portions of said first connection signals,

means for applying signals between selectable stages of selectable ones of said registers of said portion of registers and selectable ones of said second connections, and

means, including a predetermined second portion of said plural registers, for controlling said applying means, and

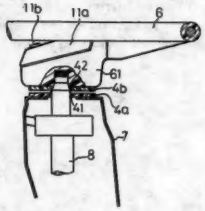
means, in said coupling means and responsive to predetermined portions of signals from said first connections, for provisioning said coupling means to determine how other predetermined portions of signals at said first connections will be presented at predetermined ones of said second connections.

4,623,889

SIGNAL TRANSMITTING DEVICE

Hiroaki Tanaka, Nukata, and Shigeyuki Akita, Okazaki, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Aug. 24, 1984, Ser. No. 643,828
Claims priority, application Japan, Sep. 8, 1983, 58-165689
Int. Cl.[4] G08C *19/10*
U.S. Cl. 340—870.37 **11 Claims**



1. A signal transmitting device which performs the signal transmission between a stationary body and a rotating body which rotates at such a position as to be opposed to said stationary body, comprising:

a first electrode provided on said stationary body;

a second electrode provided on said rotating body, said second electrode being opposed to said first electrode to compose a capacitor with said first electrode;

a signal generating circuit which is provided on one of said stationary body and said rotating body and is connected to one of said first electrode and said second electrode for generating a transmitting signal;

a high frequency circuit which is provided on the other one of said rotating body and said stationary body and is connected to the other one of said second electrode and said first electrode, said high frequency circuit being electrically coupled with said signal generating circuit through said capacitor; the output signal of said high frequency circuit being changed in accordance with the change in said transmitting signal; and

a receiving circuit which is electrically connected to said high frequency circuit for recognizing said transmitting signal from the change in the output signal of said high frequency circuit.

4,623,890

APPARATUS FOR COMPENSATING NON-LINEARITIES IN FREQUENCY-MODULATED SIGNAL

Paul A. Nysen, Sunnyvale, Calif., assignor to X-Cyte Inc., Mountain View, Calif.

Filed Jun. 30, 1983, Ser. No. 509,522
Int. Cl.[4] G01S *13/82, 9/42*
U.S. Cl. 342—44 **14 Claims**

1. In a system for interrogating a transponder carrying encoded information, said system comprising:

(1) means for transmitting a first signal having a time varying

first frequency f(t), said first frequency successively assuming a plurality of frequency values within a prescribed frequency range and having, within said range, a monotonically varying average time derivative (df/dt);

(2) remote transponder means for receiving said first signal and for transmitting a second signal in reply thereto, said transponder means including signal transforming means, coupled to receive said first signal as an input, for producing said second signal as an output, said signal transforming means including:

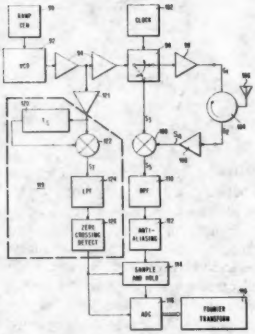
(i) a plurality of signal conditioning means coupled to receive said first signal, each signal conditioning means providing an intermediate signal having a known delay and a known amplitude modification to said first signal; and

(ii) signal combining means coupled to all of said signal conditioning means, for combining said intermediate signals to produce said second signal, said signal conditioning means and said signal combining means imparting a known informational code to said second signal associated with said transponder means;

(3) means for receiving said second signal from said transponder means;

(4) means, coupled to said transmitting means, for producing a third signal derived from said first signal;

(5) means, coupled to said receiving means, for producing a fourth signal derived from said second signal;



(6) first signal mixing means for mixing together said third signal and said fourth signal, thereby to produce a fifth signal;

(7) analog-to-digital converter means, coupled to said first mixing means, for producing digital samples of said fifth signal in response to a sampling signal; and

(8) digital signal processing means, responsive to said digital samples, for analyzing at least some of the frequencies contained in said fifth signal, thereby to determine said informational code associated with said transponder means;

the improvement comprising apparatus for compensating for non-linearities in said average time derivative (df/dt) including:

(a) delay means, coupled to receive as an input signal said first signal, for producing a delayed signal which is a delayed version of said input signal with a prescribed time delay (T_1);

(b) second signal mixing means for mixing together said first signal and said delayed signal thereby to produce a sixth signal; and

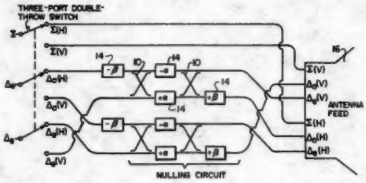
(c) means responsive to said sixth signal for producing said sampling signal having a frequency which is dependent upon the frequency of said sixth signal, the sampling times of said sampling signal defining those instants at which the first signal has changed in frequency by a prescribed amount Δf ($\Delta f = 1/T_1$ or a whole fraction or an integer multiple thereof), wherein said analog-to-digital converter means is responsive to said sampling signal for producing a digital sample when said frequency f(t) has changed by said prescribed amount Δf.

4,623,891

FAR-FIELD NULLING TECHNIQUE FOR REDUCING THE SUSCEPTIBILITY TO CROSS-POLARIZED SIGNAL IN DUAL-POLARIZED MONOPULSE-TYPE TRACKING ANTENNAS

Richard C. Johnson, Atlanta, Ga., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 15, 1984, Ser. No. 620,973
Int. Cl.[4] H01Q *21/06, 21/24*
U.S. Cl. 342—361 **8 Claims**



1. Apparatus for reducing cross-polarized radiation in the vicinity of the axis of a dual-polarized monopulse-type tracking antenna having four difference ports connected to respective signal channels, namely, a horizontally polarized azimuth difference first port and channel, a horizontally polarized elevation difference second port and channel, a vertically polarized azimuth difference third port and channel, and a vertically polarized elevation difference fourth port and channel, wherein said apparatus comprises:

first directional coupling means, connected to the first and fourth channels, for directionally diverting a portion of a first signal in either channel to the other channel, said first directional coupling means including first magnitude adjusting means for adjusting the magnitude of the diverted portion of the first signal relative to the magnitude of the undiverted portion of the first signal;

first phase shifting means for shifting the phase of the diverted portion of the first signal relative to the phase of the undiverted portion of the first signal;

second directional coupling means, connected to the second and third channels, for directionally diverting a portion of a second signal in either channel to the other channel, said second directional coupling means including second magnitude adjusting means for adjusting the magnitude of the diverted portion of the second signal relative to the magnitude of the undiverted portion of the second signal; and

second phase shifting means for shifting the phase of the diverted portion of the second signal relative to the phase of the undiverted portion of the second signal.

4,623,892

DYNAMIC LIMITER FOR MLS RECEIVER

Mohamed Enein, Northport, N.Y., assignor to Hazeltine Corporation, Commack, N.Y.

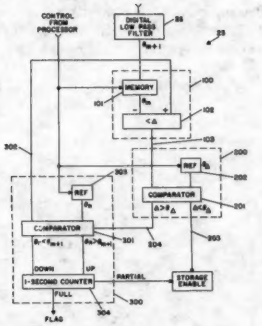
Filed Dec. 24, 1984, Ser. No. 685,861
Int. Cl.[4] G01S *1/16, 1/18*
U.S. Cl. 342—411 **4 Claims**

1. In a microwave landing system (MLS) receiver for use in an aircraft, said receiver including means for receiving scanning signals radiated by an MLS ground system and means for determining the angle between the aircraft and the scanning signals, the improvement comprising:

(a) first means for determining the difference between the

angle for a particular scanning signal as compared to the angle for a previous scanning signal;

(b) second means for comparing the difference to a predetermined difference; and



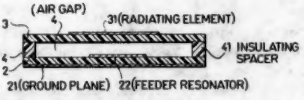
(c) third means responsive to said second means for providing an alarm when the difference is greater than the predetermined difference.

4,623,893

MICROSTRIP ANTENNA AND ANTENNA ARRAY

Albert Sabban, Kiryat Yam, Israel, assignor to State of Israel, Ministry of Defense, Rafael Armament & Development Authority, Haifa, Israel

Filed Dec. 6, 1983, Ser. No. 558,433
Int. Cl.[4] H01Q *1/38*
U.S. Cl. 343—700 MS **7 Claims**



1. A microstrip antenna of wide bandwidth comprising:

(a) a first dielectric layer carrying on one face an electrically-conductive element serving as the ground plane, and on its opposite face an electrically-conductive element serving as a feeder-resonator;

(b) a second dielectric layer over said first dielectric layer and of a lower permittivity than said first dielectric layer, said second dielectric layer carrying a single electrically-conductive element overlying said feeder-resonator and serving as a single radiator electromagnetically coupled to said feeder-resonator of the first dielectric layer, said radiator being parallel to, concentric with, of the same geometrical shape as, and of larger dimensions than, said feeder-resonator so as to completely overlie same; and

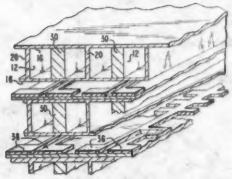
(c) spacing means spacing said second dielectric layer from said first dielectric layer at a distance equal to at least twice the thickness of said first dielectric layer and providing a permittivity therebetween which is between 1 and 2.2 and is lower than that of said second dielectric layer.

4,623,894

INTERLEAVED WAVEGUIDE AND DIPOLE DUAL BAND ARRAY ANTENNA

Kuan M. Lee, Brea; Ruey S. Chu, Cerritos; Nam S. Wong, Fullerton; James U. Clark, Anaheim, and Raymond Tang, Fullerton, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jun. 22, 1984, Ser. No. 623,857
Int. Cl.[4] H01Q *21/28*
U.S. Cl. 343—700 MS **19 Claims**



1. A dual band array antenna comprising:

a. a plurality of similar, open-ended rectangular waveguides configured for operating in a first frequency band, each said waveguide comprising two opposing broad walls and two opposing narrow walls, and each said waveguide having a cut off frequency below the first frequency band;

the waveguides being arranged in a substantially equally spaced apart relationship in a plurality of rows with the broad walls of each of the waveguides substantially parallel to the broad walls of the other waveguides;

b. a plurality of microstrip dipoles configured for operating in a second frequency band which is substantially lower than the cut off frequency of the waveguides;

the dipoles being formed on a dielectric substrate having a dielectric constant of at least about 5, the dipoles being arranged in a substantially equally spaced apart relationship in a plurality of rows which are interleaved with the rows of waveguides, the dipoles being oriented substantially parallel with one another and in relation to the waveguides such that the polarization of signals from the dipoles is perpendicular to the polarization of the signals from the waveguides, the lateral separation between the dipoles in any row thereof being no greater than about twice the lateral spacing of the waveguides in adjacent rows;

c. first feeding means for feeding signals of the first frequency band to the waveguides;

d. second feeding means for feeding signals of the second frequency band to the dipoles; and

e. a plurality of microstrip filters, each of the filters being connected to a corresponding one of the dipoles, the filters being configured for substantially blocking signals of the first frequency band in the second feeding means.

4,623,895

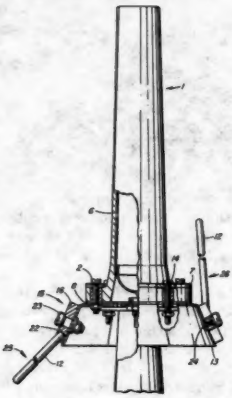
FLEXIBLE BROADBAND UHF ANTENNA

Cyril J. Bowering, Gloucester, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence of Her Majesty's Canadian Government, Ottawa, Canada

Filed Apr. 16, 1984, Ser. No. 600,644
Claims priority, application Canada, Apr. 29, 1983, 427000
Int. Cl.[4] H01Q *1/08, 9/38*
U.S. Cl. 343—829 **9 Claims**

1. A broadband antenna comprising a hollow electrically conductive flexible sleeve, a truncated conical flexible tubular support of dielectric material disposed along and surrounding and adhering to said sleeve, the dielectric material increasing the bandwidth of the antenna, a conductive base mounting plate holding said sleeve and dielectric material in an upright position, a conductive ring secured at the lower end of said

sleeve within said dielectric, said conductive ring and lower sleeve end being spaced above said mounting plate, said dielectric having a flared base below said ring secured to said plate, signal feed means connected through said base plate to said ring, a support member secured to said mounting plate, a plurality of pivotable rods extending radially from said support member, means for pivotally securing said plurality of rods to said support member for selective movement in upward and downward positions and forming an artificial ground plane in said downward position and including a plurality of base members spaced about said support member, each base member



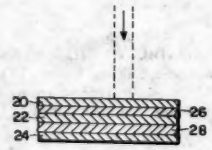
being secured to a respective rod, a plurality of yieldable protuberances each associated with a respective base member and an adjacent area of said support member and located on one of said respective base member and adjacent area of said support member, a pair of recesses located on the other of said respective base member and adjacent area of said support member, and means to rotatably mount each said base member to said support member so that the respective protuberance yields during rotation of said base member on said support member and engages one of said recesses in the path of rotation to hold said base member and rod in a selected position.

4,623,896

PROPORTIONAL DENSITY RECORDING MEDIUM

Robert W. Hausslein, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Feb. 4, 1985, Ser. No. 698,096
Int. Cl.[4] G01D *15/34*; G03C *5/24*
U.S. Cl. 346—1.1 **39 Claims**



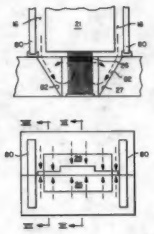
1. A method of thermal imaging comprising the step of:
irradiating imagewise an imaging layer having a selected depth dimension and having therein an organic material that has an initial spectral absorptivity in the visible or non-visible region of the electromagnetic spectrum, the concentration of said material varying as a function of depth from a radiation entry surface of the layer, the irradiation within the initial absorption spectra of the material developing heat energy therein to cause an imagewise visible change in said imaging layer.

4,623,897

INK JET AIR-SKIVING START-UP SYSTEM

Mark E. Brown, West Carrollton; Bruce W. Gamble, Fairborn; Michael J. Piatt, Enon, and Randy D. Vandagriff, Fairborn, all of Ohio, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 12, 1985, Ser. No. 722,545
Int. Cl.[4] G01D *15/18*
U.S. Cl. 346—75 **16 Claims**



1. In continuous ink jet printing apparatus of the type having a print head with an ink cavity, an orifice plate in fluid communication with said cavity, means for supplying ink to said cavity to produce a stream(s) of ink droplets directed along a nominal printing path from said orifice plate and a charge plate located proximate the nominal path of such droplet stream(s), the improvement comprising:

(a) means for adjusting said apparatus said so that droplet stream(s) from said orifice plate impact on said charge plate;

(b) air skiving means for producing a high velocity air flow, from a location external of said orifice plate, across said charge plate; and

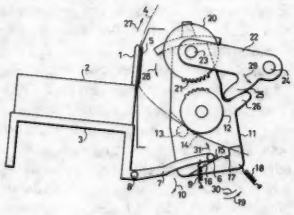
(c) control means for: (i) controlling said adjusting means to selectively vary the droplet stream between nominal and impacting conditions and (ii) controlling said air skiving means between active and inactive conditions.

4,623,898

MANUAL PAPER FEED MECHANISM FOR PRINTER

Toshiyuki Yamamoto, Tamayama, Japan, assignor to Alps Electric Co., Ltd., Japan

Filed Jan. 22, 1985, Ser. No. 693,276
Claims priority, application Japan, Jan. 23, 1984, 59-6335[U]
Int. Cl.[4] G01D *15/10*
U.S. Cl. 346—76 PH **3 Claims**



1. A manual paper feed mechanism for a printer of the type having a platen, a print head for printing on a paper supported by the platen, the print head being mounted on a carriage movable toward or away from the platen, a rotatable paper

feed roller for feeding paper with respect to the platen, and a paper feed gear for rotating the paper feed roller, said mechanism comprising:

a movable manual lever supporting a rotatable manual knob having a peripheral gear section engageable with the paper feed gear, said manual lever being operable to move said manual knob and peripheral gear section toward and away from the paper feed gear and having a first cam portion thereon;

a pivotable release lever mounting the paper feed gear and having a second cam portion and a linkage for moving the carriage away from the platen when said release lever is moved to a first position;

said first cam portion of said manual lever being engageable with said second cam portion on said release lever when said manual lever is operated so as to pivot said relase lever to said first position moving the carriage away from the platen, whereby manual feeding of the paper can be effected without interference of the print head with the paper.

4,623,899

RECORDING APPARATUS

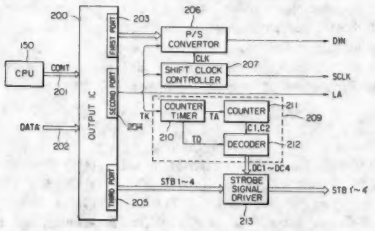
Kenzo Sakakibara, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 27, 1985, Ser. No. 716,806

Claims priority, application Japan, Apr. 3, 1984, 59-65076

Int. Cl.[4] G01D *15/10*

U.S. Cl. 346—76 PH **10 Claims**



1. A recording-apparatus comprising:

record means including a plurality of recording elements for recording on a record medium;

control means including means for generating time division drive signals to drive said plurality of recording elements sequentially such that the driving time period of said recording elements is controlled thereby; and

gate signal generation means for generating a plurality of time division gate signals when an abnormality in the control means impairs the time division drive signals, wherein said plurality of recording elements are driven by the time division gate signals when the abnormality occurs in said control means such that the driving time period of said recording elements is controlled thereby.

4,623,900

IMAGE BUILDING APPARATUS

Junji Watanabe, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Japan

Filed Nov. 21, 1984, Ser. No. 673,847

Claims priority, application Japan, Nov. 22, 1983, 58-219716

Int. Cl.[4] G01D *15/10*

U.S. Cl. 346—76 PH **10 Claims**

1. An image building apparatus for transferring an image in a superimposed manner onto first and second faces of a sheet-shaped printing medium having a leading end and a trailing end, said apparatus comprising:

image transfer means for transferring a printing agent onto said printing medium when said printing medium moves through said image transfer means in a forward direction;

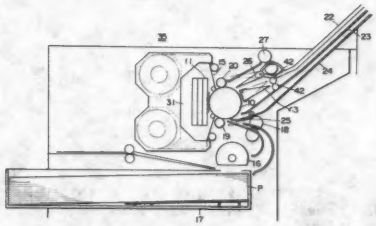
first guiding means;

second guiding means disposed parallel to said first guiding means;

a discharging tray;

first feeding means for feeding said printing medium to said image transfer means with said leading end of said printing medium in said forward direction to permit transfer of said printing agent to said first face of said printing medium;

conveying means for reciprocating said printing medium fed to said image transfer means between said first and second guiding means a plurality of times through said image transfer means, said printing medium being reciprocated from said second guiding means to said first guiding means



in said forward direction and from said first guiding means to said second guiding means in a reverse direction, said first face of said printing medium having said printing agent transferred thereto when said leading end of said printing medium is conveyed through said image transger means in said forward direction, and said second face of said printing medium having said printing agent transferred thereto when said trailing end of said printing medium is conveyed through said image transfer means in said forward direction; and

second feeding means for feeding said printing medium from said first guiding means to said image transfer means with said trailing end of said printing medium in said forward direction to permit transfer of said printing agent to said second face of said printing medium.

4,623,901

METHOD AND APPARATUS FOR PRINTING AN IMAGE

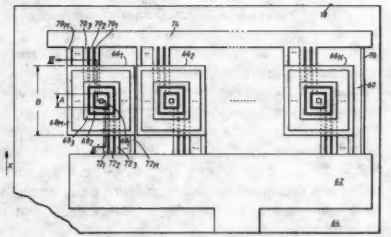
Masayoshi Nagashima, Chigasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Aug. 28, 1985, Ser. No. 770,172

Claims priority, application Japan, Sep. 27, 1984, 59-202702

Int. Cl.[4] G01D *15/10*

U.S. Cl. 346—76 PH **15 Claims**



1. An apparatus for printing an image having varying tones on a recording medium transported in a predetermined direction, comprising;

a substrate;

a plurality of printing elements disposed on said substrate in a line crossing said predetermined direction and adapted to print picture elements of the image, each said printing element having a first rectangular printing segment and a second rectangular printing segment surrounding said first rectangular printing segment, said printing segments being selectively activatable to print a picture element with a desired image density; and

means for driving said printing segments to produce a plurality of adjacent picture elements of the image with varying tones on the recording medium with each said picture element being produced with a desired image density corresponding to one tone by actuating a predetermined number of said printing segments.

4,623,902

BELT-SHAPED MATERIAL CONVEYING APPARATUS

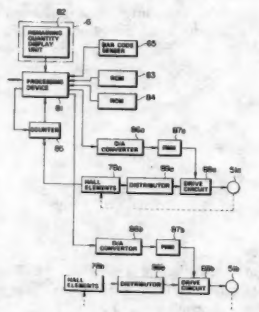
Eiichi Yamanishi, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Japan

Filed Jan. 24, 1985, Ser. No. 694,249

Claims priority, application Japan, Jan. 27, 1984, 59-12935

Int. Cl.[4] G01D *15/10*

U.S. Cl. 346—76 PH **19 Claims**



1. An apparatus for conveying a belt-shaped material having opposite ends secured to respective winding cores, at least one of said winding cores being connected to a motor so that said material is conveyed from one winding core to the other in the longitudinal direction of said material along a conveying path by rotation of said motor, and said material including marks provided at a given interval along said longitudinal direction of said material, said apparatus comprising:

mark sensor means for detecting said marks at a given position of said conveying path of said material;

pulse generating means for generating a pulse each time said motor rotates by a predetermined angle;

counting means for counting the pulses generated by said pulse generating means, said counting means being reset each time one of said marks is detected by said mark sensor means;

calculating means for calculating the remaining length of said material based on the count of said counting means each time one of said marks is detected; and

display means for displaying said calculated remaining length of the material.

4,623,903

THERMAL HEAD

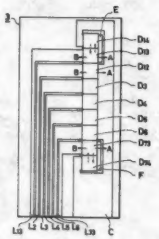
Kenichiro Hashimoto, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 15, 1985, Ser. No. 712,025

Claims priority, application Japan, Mar. 22, 1984, 59-55331

Int. Cl.[4] G01D *15/10*

U.S. Cl. 346—76 PH **27 Claims**



1. A thermal head for recording an image, comprising:

a plurality of main heating elements disposed in a row for producing heat by being provided with electricity to record an image;

one or more auxiliary heating elements each juxtaposed with a different one of said main heating elements at a respective end of said row, for producing heat by being provided with electricity to reduce heat diffusion from its respective said end main heating element; and

connection means for electrically connecting each of said auxiliary heating elements to said respective end main heating element in series or in parallel.

4,623,904

INK-JET PRINTING HEAD, A METHOD FOR ITS MANUFACTURE, AND A TOOL USEABLE FOR CARRYING OUT THIS METHOD

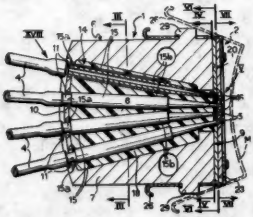
Renato Conta, Ivrea; Vincenzo Perucca, Banchette, and Remo Rocchi, Turin, all of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Italy

Filed Sep. 25, 1985, Ser. No. 780,039

Claims priority, application Italy, Sep. 25, 1984, 67954 A/84

Int. Cl.[4] G01D *15/18*

U.S. Cl. 346—140 R **30 Claims**



1. An ink-jet printing head comprising an ink reservoir, a plurality of tubes each having one end communicating with the ink reservoir, a respective electrical signal transducer associated with each tube to generate an instantaneous variation in the volume of the tube so as to cause the discharge of the ink through the other end of the tube towards a printing surface, and a common support for the tubes having a plate member provided with a series of nozzles aligned with the other ends of the tubes, wherein the plate member is mounted on the support so as not to touch the other ends of the tubes, whereby the

tubes are free to follow the volume variations caused by the corresponding transducers.

4,623,905

LIQUID SUPPLY APPARATUS

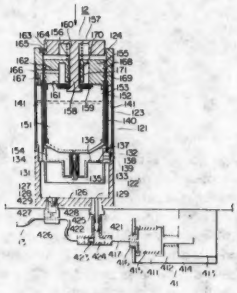
Hiroo Ichihashi; Shigeo Toganoh, and Yohji Matsufuji, all of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 9, 1983, Ser. No. 559,933

Claims priority, application Japan, Dec. 15, 1982, 57-219526; Dec. 15, 1982, 57-219527

Int. Cl.[4] G01D *15/16*; G01F *11/00*

U.S. Cl. 346—140 R **17 Claims**



1. A liquid jet recording apparatus comprising:

a recording head;

means for guiding a medium on which recording is carried out to enable recording thereon by said recording head; and

a liquid supply system including a reservoir for storing liquid, pumping means for supplying liquid under pressure from said reservoir to said recording head, a first liquid passage for enabling communication with said reservoir, a second liquid passage for enabling communication between said reservoir and said pumping means, first valve means disposed in said first liquid passage for restricting flow of liquid therein toward said reservoir, said first valve means having a predetermined resistance to flow in a direction away from said reservoir, and second valve means in said second liquid passage for restricting flow of liquid therein toward said reservoir, said second valve means having a predetermined resistance to flow in a direction away from said reservoir, said predetermined resistance to flow of said first valve means being smaller than that of said second valve means.

4,623,906

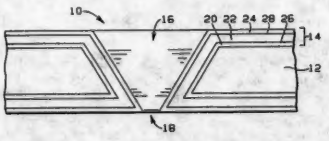
STABLE SURFACE COATING FOR INK JET NOZZLES

G. V. Chandrashekhar, Mahopac, and Merrill W. Shafer, Peekskill, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 31, 1985, Ser. No. 793,378

Int. Cl.[4] G01D *15/18*

U.S. Cl. 346—140 R **11 Claims**



1. An ink jet nozzle for ink jet printing, comprising:

a layer of silicon or glass having an opening for said nozzle therein,

a multi-level coating on said nozzle comprised of a first layer of silicon nitride on said silicon or glass layer, an intermediate layer comprised of a mixture of silicon nitride and aluminum nitride, and a third layer comprised of aluminum nitride.

4,623,907

SEMICONDUCTOR LIGHT-EMITTING DEVICE

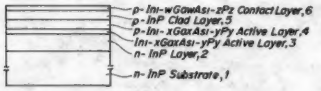
Hiroshi Okuda, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Oct. 18, 1984, Ser. No. 662,043

Claims priority, application Japan, Oct. 19, 1983, 58-195529

Int. Cl.[4] H01L *33/00*

U.S. Cl. 357—17 **4 Claims**



1. In a semiconductor light-emitting device an arrangement comprising:

an n-InP clad layer,

an undoped $In_{1-x}Ga_xAs_{1-y}P_y$ active layer formed on said n-InP clad layer, and

a p-$In_{1-x}Ga_xAs_{1-y}P_y$ active layer formed on said undoped $In_{1-x}Ga_xAs_{1-y}P_y$ active layer, a p-n junction being formed at an interface region between said n-InP layer and said undoped $In_{1-x}Ga_xAs_{1-y}P_y$ active layer.

4,623,908

THIN FILM TRANSISTORS

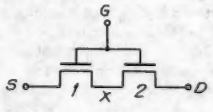
Hiroyuki Oshima; Toshimoto Kodaira, and Toshihiko Mano, all of Suwa, Japan, assignors to Seiko Epson Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 31, 1983, Ser. No. 481,087

Claims priority, application Japan, Apr. 1, 1982, 57-54336; Apr. 15, 1982, 57-63157

Int. Cl.[4] H01L *29/78*

U.S. Cl. 357—23.7 **5 Claims**



1. A low-leakage thin film transistor comprising:

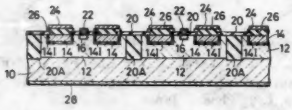
an insulating substrate comprising a material from the group consisting of glass quartz;

a plurality of thin film transistors formed of non-monocrystalline silicon on the insulating substrate, the source-drain paths of the thin film transistors being connected in series to provide one source electrode and one drain electrode, the gate electrodes of the thin film transistors being connected to form one common date electrode wherein the leakage current of the thin film transistor does not substantially increase when negative voltage is increasingly applied to the gate.

4,623,909
SEMICONDUCTOR PHOTODETECTOR

Jun-ichi Nishizawa, No. 6-16, Komegafukuro 1-chome, Sendai-shi, Miyagi, and Takashige Tamamushi, Sendai, both of Japan, assignors to Jun-ichi Nishizawa, Miyagi, Japan

Filed Feb. 28, 1984, Ser. No. 584,351
Claims priority, application Japan, Feb. 28, 1983, 58-30928
Int. Cl.[4] H01L *27/14, 29/80, 31/00*
U.S. Cl. 357—30 8 Claims

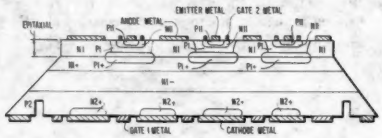


1. A semiconductor photodetector composed of static induction transistors including a source region, a drain region and at least one gate region, said gate region forming a boundary with a channel region and in which carriers generated in response to incident light are accumulated, wherein the improvement comprises means for suppressing the depletion of carriers accumulated in reading data by forming a potential barrier provided by an insulating layer formed along said boundary between each of said gate regions and said channel region.

4,623,910
SEMICONDUCTOR DEVICE

Robert L. Risberg, 1810 S. Calhoun Rd., New Berlin, Wis. 53151

Filed Sep. 24, 1982, Ser. No. 422,920
Int. Cl.[4] H01L *29/74*
U.S. Cl. 357—38 7 Claims

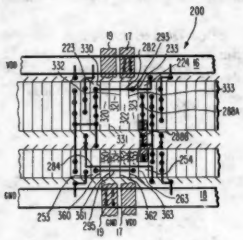


1. A semiconductor device comprising:
a body of semiconductor material of a first conductivity type;
a layer of semiconductor material of a second conductivity type on one face of said body of semiconductor material and forming a PN junction therewith;
at least one island region of said first conductivity type in said layer of semiconductor material;
a cathode electrode in electrical contact with said island region in said layer of semiconductor material;
a first gate electrode in electrical contact with said layer of semiconductor material adjacent said island region;
at least a first island region of said second conductivity type in said body of semiconductor material on a face opposite said one face;
a second island region of said first conductivity type within said first island region of said second conductivity type;
a third island region of said second conductivity type within said second island region of said first conductivity type, said first, second and third island regions forming a bipolar transistor;
an anode electrode in electrical contact with said body of semiconductor material adjacent said first island region;
an emitter electrode electrically common with said anode electrode and in electrical contact with said third island region of said second conductivity type; and
a second gate electrode in electrical contact with said second island region of said first conductivity type.

4,623,911
HIGH CIRCUIT DENSITY ICS

Richard L. Pryor, Voorhees Township, Camden County, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Dec. 16, 1983, Ser. No. 562,245
Int. Cl.[4] H01L *29/78*
U.S. Cl. 357—45 9 Claims



1. A semiconductor integrated circuit (IC) comprising:
a plurality of parallel lines of first conductivity type transistors and a plurality of parallel lines of second conductivity type transistors, each of said lines of transistors extending parallel to a first direction;
said lines of first conductivity type transistors and said lines of second conductivity type transistors being interspersed in a second direction perpendicular to said first direction with each line of first conductivity type transistors being adjacent to at least one line of second conductivity type transistors and each line of second conductivity type transistors being adjacent to at least one line of first conductivity type transistors;
one of said lines of first conductivity type transistors together with an adjacent one of said lines of second conductivity type transistors comprising a cell row;
a first plurality of conductors disposed in a first layer and extending primarily parallel to said rows; and
a second plurality of conductors disposed in a second layer and extending primarily perpendicular to said rows, said second plurality including a plurality of conductors each of which extends perpendicular to said rows and crosses at least two of said rows and is referred to as a row-crossing conductor;
said first layer being disposed between said transistors and said second layer;
said conductors of said first and second pluralities selectively interconnecting said transistors to provide intracell and intercell connections to provide a desired function for said IC and to create a plurality of first-type logic cells, each of which performs the same logic function and includes within its boundaries transistors within only one cell row, said plurality of first-type logic cells including both a standard version of said logic cell and a hyphenated version of said logic cell;
said standard version of said first-type logic cell including within its boundaries a first predetermined number of said first conductivity type transistors and a second predetermined number of said second conductivity type transistors which are interconnected within said cell in a particular manner, both of said predetermined numbers being integers greater than one;
said hyphenated version of said first-type logic cell including within its boundaries:
said first predetermined number of said first conductivity type transistors and said second predetermined number of said second conductivity type transistors which correspond respectively, to said first conductivity type and said second conductivity type transistors in said standard version of said first-type logic cell, an extra space not present in said standard version which runs perpen-

dicular to the cell rows and over which passes one of said row-crossing conductors,

said predetermined numbers of said first and second conductivity type transistors of said hyphenated version being interconnected within said cell in said particular manner and being distributed with some of each type disposed on each side of said extra space.

4,623,912

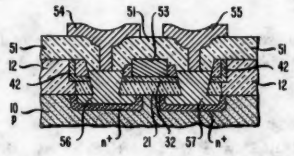
NITRIDED SILICON DIOXIDE LAYERS FOR SEMICONDUCTOR INTEGRATED CIRCUITS

Chuan C. Chang, Warren; Dawon Kahng, Bridgewater; Avid Kamgar, Millington, and Louis C. Parrillo, Warren, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 5, 1984, Ser. No. 678,569

Int. Cl.[4] H01L *29/34*

U.S. Cl. 357—54 **11 Claims**



1. A nitrided silicon dioxide layer having a top surface and a bottom surface, the nitrogen fraction at the top surface of the layer being greater than 0.13, the nitrogen fraction in the layer falling to a value below about 0.13 at a first distance of about 30 Angstroms or less from said top surface and to a value below about 0.05 at a second distance of about twice the first distance or less from said top surface.

4,623,913

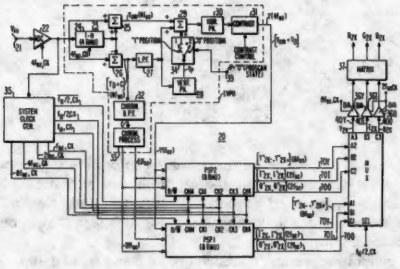
PROGRESSIVE SCAN VIDEO PROCESSOR

Russell T. Fling, Noblesville, and Donald H. Willis, Indianapolis, both of Ind., assignors to RCA Corporation, Princeton, N.J.

Filed Apr. 13, 1984, Ser. No. 600,931

Int. Cl.[4] H04N *7/01*

U.S. Cl. 358—11 **3 Claims**



1. A progressive scan processor, comprising:

input means for receiving an interlaced composite video input signal and having a first output for providing a luminance signal having suppressed vertical detail and a second output for providing a vertical detail signal;

peaking means coupled to said second output of said input means for producing a peaked vertical detail signal;

first speed-up memory means coupled to said first output of said input means for doubling the line rate of said luminance signal by alternately storing each line of said luminance signal in first and second memories and recovering each stored line twice during first and second read cycles as one line is being stored to provide a double line-rate luminance output signal having repeated lines with each line thereof having suppressed vertical detail;

second speed-up memory means coupled to said peaking means for doubling the line rate of said peaked vertical detail signal by alternately storing each line thereof in third and fourth memories and recovering each stored line twice as one line is being stored to provide a double line-rate peaked vertical detail output signal;

output means coupled to said first and second speed-up memory means for combining said double line rate signals and for reversing the polarity of said double line rate peaked vertical detail signal from line-to-line to provide a progressively scanned non-interlaced luminance output signal in which each line is repeated and includes a peaked vertical detail component which alternates polarity from line to line.

4,623,914

DISCRIMINATION CIRCUIT FOR A LINE SEQUENTIAL SIGNAL

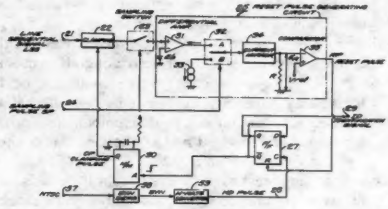
Michio Kuribayashi, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 12, 1984, Ser. No. 660,325

Claims priority, application Japan, Oct. 15, 1983, 58-192941; Dec. 22, 1983, 58-241065

Int. Cl.[4] H04N *11/18*

U.S. Cl. 358—14 **9 Claims**



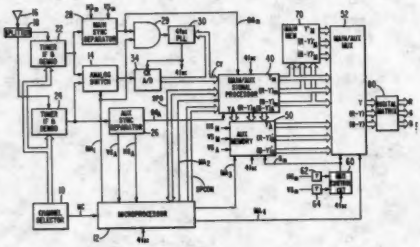
5. A line-sequential color signal discrimination circuit which receives as its input signal a line sequential color signal provided by alternately selecting two kinds of color signals at a time interval of one horizontal scanning period to arrange the color signals in a line sequential fashion and modulated in such a relation that the two kinds of the color signals have respectively different potentials in the adjacent horizontal blanking periods after demodulation and which generates as its output signal an identification pulse signal discriminating between the two kinds of the color signals, said discrimination circuit comprising: a horizontal synchronizing signal separating circuit separating the horizontal synchronizing signal from a composite video signal; a horizontal scanning period rate conversion circuit extracting a pulse signal including pulses appearing at a time interval of one horizontal scanning period in response to the application of the output pulse signal from said synchronizing signal separating circuit; a frequency divider circuit dividing the frequency of the output pulse signal of said horizontal scanning period rate conversion circuit by the factor of 2; and an identification pulse generating circuit generating said identification pulse signal in which the information for discrimination based on the potentials of the two kinds of the color signals in the demodulated line sequential color signal in the horizontal blanking periods has a predetermined relation with the output signal of said frequency divider circuit.

4,623,915

APPARATUS FOR PROCESSING MULTIPLE TIME DIVISION MULTIPLEXED ASYNCHRONOUS COMPOSITE VIDEO SIGNALS

Thomas V. Bolger, Merchantville, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Sep. 21, 1984, Ser. No. 653,074
Int. Cl.[4] H04N *5/45*
U.S. Cl. 358—22 **15 Claims**



1. In a video signal processing system including a source of time-division multiplexed video signal having alternating first and second mutually independent composite video signal components each having luminance signal components and chrominance signal components including a color burst signal component, apparatus comprising:

an oscillator for generating a reference clock signal having a frequency substantially equal to an integral multiple of the frequency of the color burst signal component of said first composite video signal component;

filtering means, responsive to said time-division multiplexed composite video signal for separating the chrominance signal components therefrom to provide a time-division multiplexed chrominance signal having alternating first and second chrominance signal components corresponding respectively to said first and second composite video signal components; and

synchronizing means responsive to said time-division multiplexed chrominance signal, to said reference clock signal and to said color burst signal components for producing first and second phase corrected chrominance signals, each having a predetermined phase relationship with respect to said reference clock signal.

4,623,916

DETECTOR ASSEMBLY FOR A TELEVISION CAMERA

Aaron W. Levine, Lawrence Township, Mercer County, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Sep. 14, 1984, Ser. No. 650,635
Int. Cl.[4] H04N *9/04, 9/09*
U.S. Cl. 358—50 **8 Claims**

1. In a detector assembly for a television camera which comprises

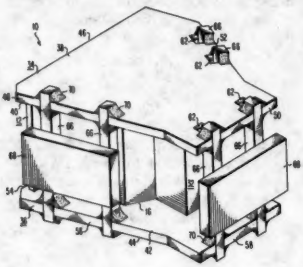
a light-splitting prism having upper and lower surfaces and at its edge an input port and at least one output port,

a pair of mounting plates each having a pair of opposed major surfaces, said mounting plates being along the upper and lower surfaces of said prism and having a major surface secured to said prism,

detector support means extending between said mounting plates adjacent an outlet port,

means securing said support means to said mounting plates, and

a detector secured to said support means and extending across said outlet port, the improvement comprising



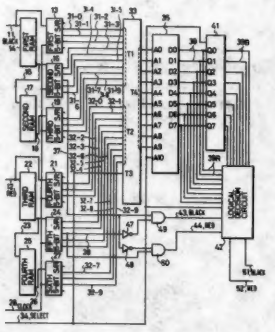
the means securing the support means to the mounting plates being only between the support means and the major surfaces of the mounting plates.

4,623,917

COLOR IMAGE DATA PROCESSING DEVICE FEATURING GHOST ELIMINATION

Akio Noguchi, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Feb. 9, 1984, Ser. No. 578,448
Claims priority, application Japan, Feb. 10, 1983, 58-19793
Int. Cl.[4] G03F *3/08*; H04N *1/46*
U.S. Cl. 358—80 **5 Claims**



1. In a reading device for reading a color picture comprising a target picture element and a plurality of peripheral picture elements positioned around said target picture element in a predetermined relationship, a color image data processing device comprising:

generating means for receiving first and second signals, for generating delayed first and second signals, said delayed first and second signals each representing a color of said target picture element, and for generating a plurality of third and fourth signals, each particular third and fourth signal each representing a color of a particular picture element of said plurality of peripheral picture elements;

correction data generating means responsive to a combination of said third signals for generating first correction data representing a color of said target picture element and responsive to a combination of said fourth signals for generating second correction data representing a color of said target picture element; and

processing means for logically combining said delayed first and second signals and said first and second correction

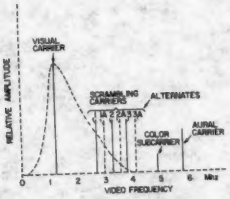
data for outputting a corrected signal representing a corrected color for said target picture element.

4,623,918

PAY TELEVISION SYSTEM UTILIZING MULTI-FREQUENCY PASSIVE FILTERS

Marc Chomet, Huntington, N.Y., assignor to Teleglobe Pay-TV System, Inc., New York, N.Y.

Filed May 2, 1983, Ser. No. 490,434
Int. Cl.[4] H04K *1/02*; H04N *7/167*; H03H *7/00*
U.S. Cl. 358—118 **3 Claims**



1. Pay-per-view television system for viewing units, comprising in combination,

means for generating a program signal throughout each viewing unit,

means for generating at least a first, second, and third interference signal, having respectively a first, second, and third frequency,

means connected to said interference signal generating means and to said program signal generating means for injecting at least a selected two of said interference signals simultaneously into said program signal, thereby creating a coded signal,

means for transmitting said coded signal to a plurality of subscriber locations, and

filter means, including at least a two frequency trap constructed with discrete components,

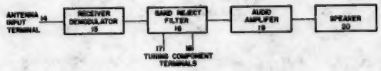
said two frequency trap having an input terminal connected to receive said coded television signal, an output terminal adapted to be connected to a selected viewing unit for filtering said selected two interference signals from said transmitted coded signal, a multiplicity of transformers, each having a tuned secondary and a primary winding, and means for connecting said primary windings in series between said input terminal and said output terminal, whereby said program signal is restored.

4,623,919

METHOD AND SYSTEM FOR CONTROLLING ACCESS TO TRANSMITTED MODULATED ELECTROMAGNETIC WAVE CARRIED INFORMATION

James D. Welch, 10328 Pinehurst Ave., Omaha, Nebr. 68124

Filed Aug. 11, 1983, Ser. No. 522,459
Int. Cl.[4] H04N *7/167*
U.S. Cl. 358—118 **3 Claims**



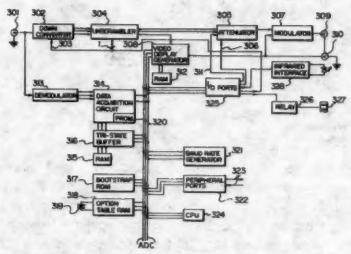
1. A system for controlling access to electromagnetic wave communication transmissions, of the type including FM-SCA, which comprises a means for generating and injecting a continuously variable audio frequency control signal into an audio frequency information signal at the transmitter in a fashion such that the resultant modulated transmitted wave is identical to the wave which would result if the audio frequency control signal were originally a part of the audio frequency information signal; and means for tuning a filter in the receiving equipment so that the audio frequency control signal does not effect the processing of the audio frequency information signal by the receiver.

4,623,920

CABLE NETWORK DATA TRANSMISSION SYSTEM

Michel Dufresne, Boucherville; Jean-Paul Champagne, Brossard; Daniel Dufresne, Montreal; Pierre Scott, Montreal, and John Courtney, Montreal, all of Canada, assignors to Le Groupe Videotron LTEE, Quebec, Canada

Filed Jan. 20, 1983, Ser. No. 459,673
Claims priority, application Canada, Apr. 15, 1982, 401036
Int. Cl.[4] H04N *7/167*
U.S. Cl. 358—122 **23 Claims**



1. A signal transmission system comprising:

(a) a head end,

(b) a transmission medium, connected to the head end, for carrying signals from the head end,

(c) a plurality of subscriber stations connected to the transmission medium,

(d) means at said subscriber stations for receiving and storing predetermined station address signals from the transmission medium,

(e) means at said subscriber stations which have stored said station address signals, for receiving and storing program signals from said transmission medium having an address component which matches said stored address signals,

(f) means at said subscriber stations having certain ones of said station address signals for receiving further signals from the transmission medium, having an address component which matches said certain ones of said address signals, and for translating said further signals, said translation being dependent on the prior storage of said program signals.

4,623,921

ANTENNA DIPLEXER UTILIZING AURAL INPUT FOR VISUAL SERVICE

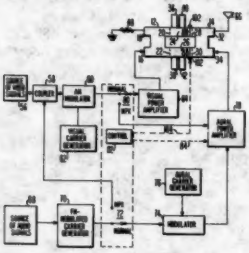
Anthony N. Schmitz, Mount Laurel, and Joseph J. Matta, Marlton, both of N.J., assignors to General Signal Corporation, Stamford, Conn.

Filed May 30, 1985, Ser. No. 739,431
Int. Cl.[4] H04N *7/04, 5/38*; H04J *5/15*
U.S. Cl. 358—143 **14 Claims**

1. In an antenna diplexer including

a first four-port hybrid having a first port adapted for coupling to a visual power amplifier generating a visual power signal, from a video signal, at a level suitable for coupling to a transmitting antenna, a second port adapted for coupling to a load, and third and fourth ports coupled to first and second transmission lines, respectively, for splitting said visual power signal into first and second portions which are propagated in said first and said second transmission lines, respectively;

a second four-port hybrid having first and second ports coupled to said first and said second transmission lines, respectively, for receiving said first and said second portions of said visual power signal and for combining said first and said second portions for propagation to a third port adapted for coupling to said antenna, said second hybrid also having a fourth port, adapted for coupling to an aural power amplifier generating an aural power signal, from an audio signal, at a level suitable for coupling to said antenna, for splitting said aural power signal into first and



second portions coupled to said first and said second transmission lines, respectively, and propagated towards said first hybrid; the improvement comprising:

shorting means coupled to said first and said second transmission lines between said second hybrid and said first hybrid for selectively reflecting back towards said second hybrid a combined visual and aural power signal produced by coupling said aural signal with said visual signal to generate an aural-multiplexed visual signal which is switched through said aural power amplifier.

4,623,922

SYSTEM FOR TIME COMPRESSION AND/OR EXPANSION OF ELECTRICAL SIGNALS

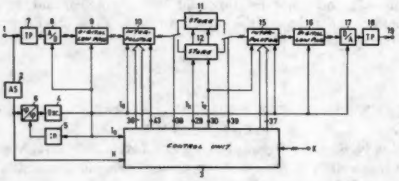
Gerhard Wischermann, Darmstadt, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 7, 1983, Ser. No. 530,075

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1982, 3233288

Int. Cl.⁴ H04N *5/14*

U.S. Cl. 358—160 **4 Claims**



1. A system for time compression or expansion of electrical signals, particularly video signals, in which samples of the signals are interpolated and written into a memory and then read from the memory, comprising first means for producing a continuous first clock signal; second means for producing a second clock signal which has the rate of the continuous first clock signal modified in accordance with predetermined compression or expansion factors by deleting certain pulses in the first clock signal; and means for writing the interpolated samples into the memory under the control of one of said clock signals and reading out the stored samples from the memory under the control of the other clock signal.

4,623,923

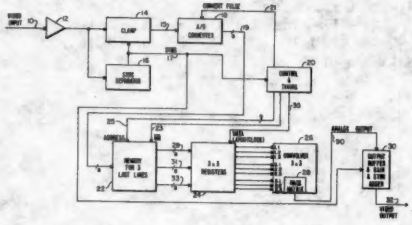
REAL-TIME VIDEO IMAGE ENHANCEMENT SYSTEM

Zvi Orbach, Waltham, Mass., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 14, 1983, Ser. No. 474,954

Int. Cl.⁴ H04N *5/14*

U.S. Cl. 358—166 **12 Claims**



1. A video enhancement system comprising:

A. means for digitizing an analog video signal, said video signal comprising a plurality of lines of information sufficient to display information represented by said video signal, each of said lines of information comprising pixel information;

B. storage means for storing a predetermined number of previously received lines of said digitized video signal, said predetermined number of previously received lines being less than said plurality of lines;

C. a plurality of register means, coupld with said storage means, for storing a matrix array of signals representative of a predetermined number of said pixels of a presently received one of said lines and of said lines stored in said storage means;

D. means for providing an enhancements signal; and

E. means for multiplying said enhancement signal with said matrix array of signals in order to produce an enhancement video signal.

4,623,924

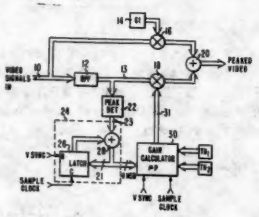
VIDEO SIGNAL AUTO PEAKING CIRCUITRY

Robert A. Wargo, Ringoes, and Leopold A. Harwood, Bridgewater, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Feb. 19, 1985, Ser. No. 702,618

Int. Cl.⁴ H04N *5/14*

U.S. Cl. 358—166 **9 Claims**



9. Apparatus for peaking a video signal occurring in field sequences, comprising:

an input bus for applying said video signal to be peaked;

scaling means coupled to said input bus and having a control input port for applying a peaking control signal, said scaling means scaling said video signal under the control of said peaking control signal;

peak detecting means coupled to said input bus for detecting the magnitude of peaks of said video signal;

means coupled to said peak detecting means for developing a signal corresponding to the energy density of said video signal over a field interval;

gain calculating means responsive to said signal developing means for producing said peaking control signal wherein said peaking control signal is relatively large for said energy density being less than a first predetermined value, is negative for said energy density being greater than a second predetermined value, and is in inverse porportion to said energy density for said energy density being between said first and second predetermined values.

4,623,925

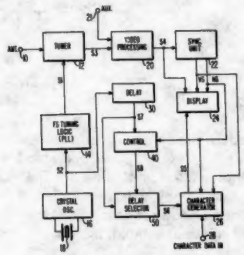
TELEVISION RECEIVER HAVING CHARACTER GENERATOR WITH NON-LINE LOCKED CLOCK OSCILLATOR

Juri Tults, Indianapolis, Ind., assignor to RCA Corporation, Princeton, N.J.

Filed Oct. 31, 1984, Ser. No. 666,862

Int. Cl.[4] H04N *5/04, 5/262*

U.S. Cl. 358—183 **4 Claims**



1. A television receiver, comprising:

display means;

video processing means coupled to supply a video output signal to said display means, said video output signal having a horizontal synchronizing component;

oscillator means for providing a clock signal asynchronous with said horizontal synchronizing component;

character generator means having an output coupled to said display means for supplying a character signal thereto in raster scan form for display with said video output signal on said display means, each line of said character signal comprising a plurality of character elements, said character generator means having a timing clock input coupled via a clock signal path to said oscillator means for controlling the timing of said character elements in accordance with said clock signal, said character elements tending to exhibit jitter due to said clock signal being asynchronous;

synchronization means responsive to said horizontal synchronizing component of said video output signal and to said clock signal for imparting a delay to the clock signal supplied to said character generator means in response to the time relationship between said horizontal synchronization component and said clock signal; and wherein

said synchronizing means comprises variable delay means in said clock signal path and means for measuring said time relationship and changing said delay of said variable delay means to minimize said jitter of displayed characters.

4,623,926

TELEVISION SYNCHRONOUS RECEIVER

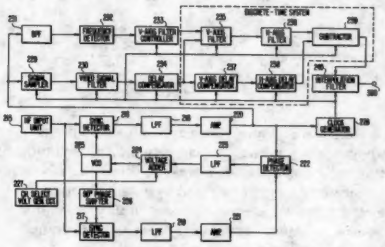
Yoichi Sakamoto, Takatsuki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Nov. 9, 1983, Ser. No. 550,221

Claims priority, application Japan, Nov. 12, 1982, 57-199186; Dec. 1, 1982, 57-211718; Dec. 21, 1982, 57-225344; Jun. 24, 1983, 58-114801; Jun. 24, 1983, 58-114802

Int. Cl.[4] H04N *5/44, 5/50*

U.S. Cl. 358—188 **22 Claims**



1. A television synchronous receiver for obtaining a video signal of a desired channel, comprising:

a voltage-controlled oscillator (VCO);

a 90° phase shifter for shifting phase of an output of said VCO by 90°;

a first synchronous detector receiving a video carrier signal and the output of said VCO as a synchronous carrier for synchronously detecting in-phase component of the video carrier signal;

a second synchronous detector receiving the video carrier signal and an output of said 90° phase shifter as a synchronous carrier for synchronously detecting quardrature component of the video carrier signal;

first and second low-pass filters for respectively filtering low frequency components of outputs of said first and second synchronous detectors within a frequency range covering a base band of video signal and an audio intermediate frequency;

a phase detector for detecting a phase difference between the video carrier signal and the output of said VCO from outputs of said first and second low-pass filters;

means for feeding an output of said phase detector back to said VCO;

a signal amplifier for amplifying the output of said first low-pass filter;

a signal converter for converting an output of said signal amplifier into a discrete-time signal;

a discrete-time system for processing the discrete-time signal;

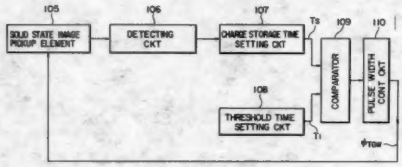
a signal reverse converter for reversely converting an output of said discrete-time system into a continuous-time signal to thereby obtain the video signal of the desired channel; and

a clock generator for separating either a television synchronous signal or a color burst signal from the output of said signal amplifier and generating a clock signal from either the television synchronous signal or the color burst signal, the clock signal being used for operating said signal converter, said discrete-time system and said signal reverse converter.

4,623,927
SOLID STATE IMAGE PICKUP APPARATUS

Kunihisa Hoshino, Urawa, Japan, assignor to Nippon Kogaku K. K., Tokyo, Japan

Filed Jul. 19, 1985, Ser. No. 756,641
Claims priority, application Japan, Jul. 27, 1984, 59-156970
Int. Cl.[4] H04N *3/14*
U.S. Cl. 358—213 **10 Claims**



3. A solid state image pickup apparatus including:

(a) photo array means, having a plurality of photoelectric transfer elements which are one-dimensionally arrayed, for storing charges generated from said plurality of photoelectric transfer elements, said plurality of photoelectric transfer elements generating charges corresponding to intensities of light incident thereon;

(b) output means for outputting the charges stored by said photo array means;

(c) transfer means for transferring the charges stored in said photo array means to said output means;

(d) first detecting means for detecting the intensities of incident light and for detecting a first detection signal;

(e) stored time control means for controlling a storage time of the charges by said photo array means in accordance with the first detection signal;

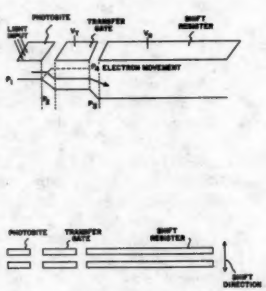
(f) second detecting means for detecting that the storage time of the charges by said photo array means in accordance with said storage time control means and for generating a second detection signal; and

(g) transfer control means for controlling an operation time of said transfer means in accordance with the second detection signal.

4,623,928
HIGH DYNAMIC RANGE CCD DETECTOR/IMAGER

Roland J. Handy, Northridge, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 23, 1984, Ser. No. 674,371
Int. Cl.[4] H04N *5/30*
U.S. Cl. 358—213 **3 Claims**



1. In a charge coupled device detector/imager including a plurality of photosite areas, associated transfer gates, and associated shift register storage areas, the method of charge detection comprising:

selectively illuminating said photosite areas with light illumination to be detected,

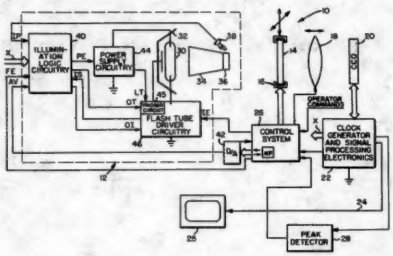
simultaneously applying a first voltage potential to said transfer gates so that light induced electron charge is immediately drained away from said photosite area, and

simultaneously applying a second voltage potential to said shift register storage areas to receive the induced electron charge generated at said photosite areas and immediately drained away therefrom.

4,623,929
FLASH TUBE SIMMER CIRCUITRY FOR A FILM VIDEO PLAYER ELECTRONIC STROBE LIGHT

David A. Johnson, and Richard A. Shroyer, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 3, 1985, Ser. No. 730,029
Int. Cl.[4] H04N *3/36*; H05B *41/14*
U.S. Cl. 358—214 **8 Claims**



1. In a film video player having an electronic strobe light including a flash tube trigger circuit operable for repetitively triggering a flash tube into conduction, for flash illuminating a solid stage image sensor by way of a pulse of high-intensity light projected onto a photographic film at the vertical retrace rate of a standard television signal, the improvement comprising:

(a) circuit means for drawing a flash tube simmer current, to maintain an arc in the flash tube between light pulses;

(b) sensing circuitry arranged for producing a control signal corresponding to whether or not said flash tube is conducting simmer current; and

(c) switching circuitry, operable at the vertical retrace rate in response to the control signal, (1) for causing the overriding of the operation of said flash tube trigger circuit when the control signal indicates that said flash tube is conducting simmer current, and (2) for causing the operation of said flash tube trigger circuit when the control signal indicates that said flash tube is not conducting simmer current.

4,623,930
CAMERA APPARATUS

Mitsuaki Oshima, Moriguchi; Masataka Izaki, Yawata; Jirou Kajino, Neyagawa; Yoshiaki Igarashi, Ikoma, and Hiroshi Mitani, Daito, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 31, 1984, Ser. No. 688,154
Claims priority, application Japan, Dec. 29, 1983, 58-251306
Int. Cl.[4] G03B *15/00*
U.S. Cl. 358—222 **22 Claims**

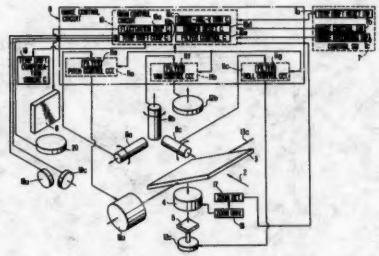
1. A camera apparatus comprising:

focusing neans for optically focusing a light beam from an object;

imaging means for converting an optical image produced by the focusing means into electric or physicochemical infor-

mation and issuing or recording the information as an image;

means for detecting fluctuations of the camera apparatus and issuing a fluctuation detecting signal and constituted by a detector mechanically vibratable at a fluctuation detecting frequency, and a vibrating angular velocity sensor for detecting vibrations of said detector and a Coriolis force generated on the basis of rotational movement of said



detecting means with respect to an absolute coordinate system and for generating said fluctuation detecting signal;

means responsive to the fluctuation detecting signal for issuing an image fluctuation control signal; and

means responsive to the image fluctuation control signal for suppressing fluctuations of the image due to the fluctuations of the apparatus.

4,623,931

PORTABLE VIDEO CAMERA WITH IMAGE PICK-UP DEVICE

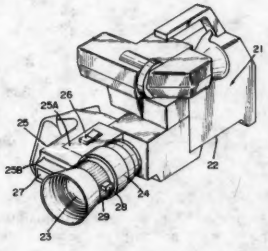
Katsu Inaga, Tokyo; Nobuo Uda, Konae, and Tatsuo Inoue, Fuchu, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 14, 1983, Ser. No. 561,357

Claims priority, application Japan, Dec. 17, 1982, 57-190902[U]

Int. Cl.⁴ H04N *9/28*

U.S. Cl. 358—227 **3 Claims**



1. A portable video camera with an image pick-up device comprising:

a camera body having a handgrip attached thereto;

adjustable focusing lens means having an optical axis and being attached to the front of said body and capable of focus adjustment for focusing on said image pick-up device an object to be picked up;

adjusting means operative by an adjusting signal for adjusting the focus of said lens means;

light emitting means for emitting measuring light to said object;

light receiving means for receiving the measuring light reflected from said object and for generating a signal corresponding to the distance between said lens means and said object; and

means for supplying said signal as said adjusting signal to said adjusting means;

said light emitting means, light receiving means and supplying means being arranged in said handgrip so that one of the measuring light emitted from said light emitting means and the measuring light reflected from said object to said light receiving means coincides with said optical axis of said lens means.

4,623,932

VIDEO CAMERA HAVING AN AUTOMATIC FOCUSING SYSTEM

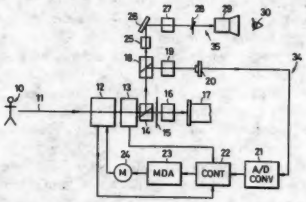
Yuzuru Inoue, Machida, and Takashi Shinozaki, Yokohama, both of Japan, assignors to Victor Company of Japan, Ltd., Kanagawa, Japan

Filed Jun. 25, 1984, Ser. No. 625,318

Claims priority, application Japan, Jul. 1, 1983, 58-119525

Int. Cl.⁴ H04N *5/38*

U.S. Cl. 358—227 **6 Claims**



1. A video camera comprising:

a camera tube;

a main optical system including a focusing lens and a master lens, for directing an external incident light towards said camera tube along a first light path;

an automatic focusing system having a sensor which obtains a focusing information responsive to an incoming light to said sensor, for carrying out an automatic focusing by displacing said focusing lens responsive to the focusing information;

light separating means arranged in said first light path for reflectively separating a first portion of said external incident light as a separated light which travels along a second light path;

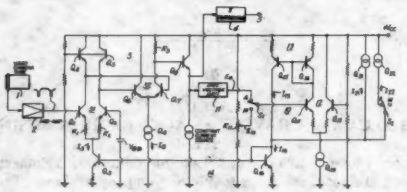
mirror prism means comprising a pair of prism elements which are put together so that a meeting surface of one prism element meets a meeting surface of the other prism element, one of said meeting surfaces being provided with a mirror part which has an elongated rectangular shape and an area which is smaller than said one meeting surface, said prism mirror means being arranged in said second light path so that said mirror part reflects and directs a second portion of said separated light towards said sensor, said second portion of said separated light travelling along a third light path; and

an optical type viewfinder arranged in said second light path for receiving a remainder of said separated light after said second portion is separated from said separated light by said mirror prism means, said external incident light continuously and simultaneously reaching said camera tube, said sensor and said optical type viewfinder along said first, second and third light paths, respectively.

4,623,933
VIDEO CAMERA GAIN CONTROL CIRCUIT

Joichi Sato, Atsugi; Ryuji Shiono, Machida; Tsutomu Nimura, Hiratsuka; Toshiaki Isogawa, and Mitsuru Sato, both of Atsugi, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 28, 1983, Ser. No. 566,390
Claims priority, application Japan, Jan. 7, 1983, 58-860
Int. Cl.[4] H01N *5/26*
U.S. Cl. 358—228 **13 Claims**



1. Apparatus for amplifying an information signal of varying level, comprising:

variable gain amplifier means receiving said information signal for amplifying said signal by a gain that is variable within first and second ranges in response to a gain control signal having a corresponding first or second value range and producing an amplified information signal, said second range being partially coextensive with and exceeding said first range;

feedback means connected to said amplified information signal for producing a feedback gain signal;

manually variable means for producing a manual gain signal;

means for producing a fixed, minimum gain control signal;

switching means including a first switch connected to said feedback gain signal and said manual gain signal for selecting one or the other thereof as an output and a second switch selectively connecting as an output said fixed gain control signal, said first and second switches cooperating to select either said first or second value range for said gain control signal; and

gain control means connected to said outputs of said first and second switches for producing therefrom said gain control signal having said first or second value range fed to said variable gain amplifier means, such that said information signal is amplified by a gain within either said first or second ranges in response to said gain control signal, in which said variable gain amplifier means includes first and second differential transistor amplifiers, said first differential transistor amplifier being connected to ground potential through a current mirror circuit and said current mirror circuit being connected to receive said gain control signal for varying a gain of said first differential transistor amplifier within said first or second range in response to a magnitude of current flowing in said current mirror circuit, and in which said means for producing a fixed gain control signal comprises constant current source means selectively connected to said current mirror circuit through said second switch for selectively causing a predetermined fixed current component to flow through said current mirror circuit.

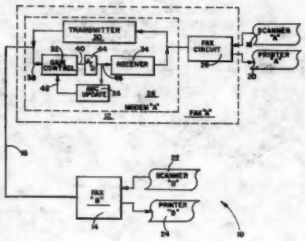
4,623,934
AGC UPDATE APPARATUS AND METHOD OF USING SAME

Raymond Taylor, Santa Ana, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Nov. 16, 1983, Ser. No. 552,512
Int. Cl.[4] H04N *1/40*
U.S. Cl. 358—280 **33 Claims**

1. A modem automatic gain control method for a modem having a modem gain control, the gain control having an input for receiving an incoming signal, an output for an amplified output signal, and a control input for receiving an amplification setting, with the amplitude gain of said gain control being responsive to said amplification setting, said method comprising the steps of:

amplifying said incoming signal in said gain control to produce said amplified output signal, with the amount of amplification of said gain control being set by said control input;



measuring the magnitude of said output signal during a plurality of sampling time periods to form a plurality of digital magnitude samples;

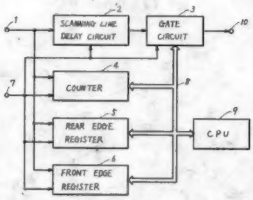
digitally comparing said magnitude samples occuring during a comparison time period to find a peak magnitude; and

adjusting said control input in accordance with said peak magnitude.

4,623,935
PICTURE EXTRACTING APPARATUS

Fumiaki Mukai, and Shuji Ito, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 23, 1984, Ser. No. 644,109
Claims priority, application Japan, Sep. 6, 1983, 58-165379
Int. Cl.[4] H04N *1/40*
U.S. Cl. 358—280 **4 Claims**



1. A picture extracting apparatus comprising:

an input terminal to which input picture signals obtained by scanning on a picture and two-valued in first and second levels concerning the tone of said picture are applied,

counting means for counting for one scanning line, signals of either of said first level and said second level in said input picture signals,

first storing means for temporarily storing an address signal representing the position of the rear edge of said picture signal on the scanning line, based on said input picture signals,

second storing means for temporarily storing an address signal representing the position of the front edge of said picture signal on the scanning line, based on said input picture signals,

determining means for determining, based on the count of said counting means, whether the count is less than a predetermined value,

gate means through which picture signals on the scanning line between the address signals temporarily stored in said first and second storing means are made to pass if it is determined based on the output of said determining means that the count of said counting means is less than the predetermined value, and

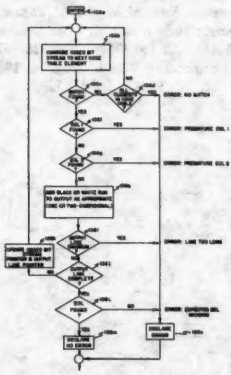
delay means for delaying said input picture signals applied to said gate means by a predetermined period of time.

4,623,936

ERROR PROCESSING TECHNIQUE FOR MODIFIED READ CODE

Stephen J. Urban, Huntingdon Valley, Pa., and Charles D. Bodson, Arlington, Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 27, 1985, Ser. No. 780,751
Int. Cl.[4] H04N *1/40*
U.S. Cl. 358—284 **9 Claims**



1. An apparatus for correcting errors in a line by line facsimile transmission comprising code words indicating picture elements to be produced, adjacent code words indicating differing colored groups of picture elements, said system comprising:

means for receiving and storing at least two lines of said code words;

means for determining the presence of an error in one of said lines of code words;

means for counting backwards in said line containing said error a predetermined number of color changes in said picture elements to be produced; and

means for substituting an alternative group of picture elements for picture elements corresponding to the end of said line including picture elements in said predetermined number of color changes.

4,623,937

SCANNING APPARATUS

Junji Watanabe, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 30, 1984, Ser. No. 635,883
Claims priority, application Japan, Jul. 29, 1983, 58-138824
Int. Cl.[4] H04N *1/32*
U.S. Cl. 358—285 **18 Claims**

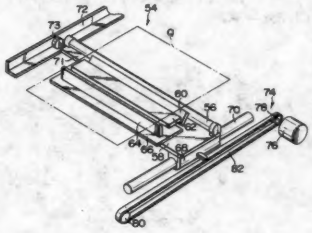
1. A scanning apparatus for scanning image information of a document and generating a signal corresponding to the image information, comprising:

a document table having at least two opposite ends, for supporting the document thereon;

exposing means for irradiating light on said document table and said supported document, from one end of said document table to said opposite end of said table;

direction changing means for changing a direction of light reflected by the document illuminated by said exposing means along a direction parallel to a longitudinal direction of said document table;

light-converging means for optically converging the light from said direction changing means, said light-converging means including a rod lens array having at least one rod



lens, said rod lens being a light-converging fiber, said rod lens array being arranged substantially in parallel with the longitudinal axis of said document table, said rod lens array having a longitudinal length being limited only by the longitudinal length of said scanning apparatus; and

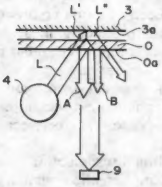
photoelectric means for receiving light passing through said light-converging means and for transducing the light to an electrical signal, said photoelectric means being an image sensor.

4,623,938

ORIGINAL IMAGE PROCESSING APPARATUS WITH IMPROVED COVER

Junichi Asano, Hohya; Hiroyuki Ishii, Yokosuka, and Otoya Kosugiyama, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 29, 1984, Ser. No. 614,765
Claims priority, application Japan, Jun. 7, 1983, 58-100240; Jun. 7, 1983, 58-100241
Int. Cl.[4] H04N *1/04, 1/40, 1/10*
U.S. Cl. 358—285 **14 Claims**



1. An original image processing apparatus, comprising:

a member having a surface for supporting an original;

covering means for covering a back side of the original supported on the surface of said supporting member, said covering means having a light reflecting portion, opposed to the supporting surface, which has a rate of specular reflection not less than 60% and not more than 90%;

means for illuminating the original supported on the supporting surface;

photodetector means responsive to an amount of light received by itself to produce an electric signal and located to receive light scatteredly reflected by the original but substantially not to receive light specularly reflected by the light reflecting portion; and

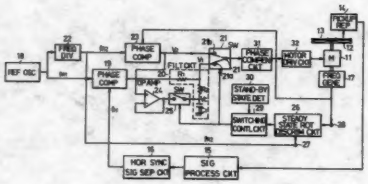
means for processing the electric signal produced by said photodetector means.

4,623,939

ROTATION CONTROL APPARATUS FOR A MOTOR

Toyotaka Machida, Kashiwa, and Ken Enami, Fujieda, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Nov. 21, 1984, Ser. No. 673,659
Claims priority, application Japan, Nov. 22, 1983, 58-220444
Int. Cl.⁴ H04N *5/93*; G11B *19/24*
U.S. Cl. 358—342 **7 Claims**



1. A rotation control apparatus for a motor, said rotation control apparatus comprising:

a motor for rotating or moving a recording medium which is pre-recorded with an information signal and a synchronizing signal;

rotation detecting means for detecting the rotation of said motor and for producing a rotation detection signal having a period which is dependent on the rotational speed of said motor;

a synchronizing signal separating circuit for separating the synchronizing signal from a signal which is reproduced from said recording medium;

reference signal generating circuit for generating first and second reference signals;

first error signal producing means for comparing the phase of the first reference signal generated from said reference signal generating circuit with the phase of the separated synchronizing signal from said synchronizing signal separating circuit so as to obtain a first phase error signal which is dependent on a phase error between the two compared signals, said first error signal producing means comprising a filter circuit having a capacitor, said first phase error signal being passed through said filter circuit and being produced as a first error signal;

second error signal producing means for comparing the phase of the second reference signal generated from said reference signal generating circuit with the phase of the rotation detection signal from said rotation detecting means, and for producing a second error signal which is dependent on a phase error between the two compared signals;

a steady state rotation discriminating circuit at least supplied with the rotation detection signal, for discriminating whether the rotational speed of said motor is near a steady state rotational speed;

a first switching circuit for selectively supplying to said motor one of the first and second error signals from said first and second error signal producing means;

a second switching circuit for selectively supplying to said capacitor of said filter circuit within said first error signal producing means a specific signal having a level which is dependent on the level of the second error signal; and

switching control means at least supplied with an output discrimination signal of said steady state rotation discriminating circuit, for controlling the switching of said first and second switching circuits,

said switching control means supplying the specific signal to said capacitor through said second switching circuit and selectively passing the second error signal through said first switching circuit when said motor rotates at a rotational speed which is not near the steady state rotational speed,

said switching control means blocking the supply of the specific signal to said capacitor by said second switching circuit and selectively passing the first error signal through said first switching circuit when said motor rotates at a rotational speed which is approximately equal to the steady state rotational speed,

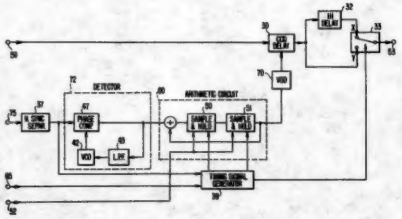
the level of said first error signal being variably controlled according to the level of the second error signal when said motor rotates at a rotational speed which is not near the steady state rotational speed.

4,623,940

MAGNETIC REPRODUCING APPARATUS

Tokikazu Matsumoto, Osaka; Masahiro Honjo, Neyagawa, and Masaaki Kobayashi, Kawanishi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 22, 1983, Ser. No. 525,567
Claims priority, application Japan, Aug. 24, 1982, 57-147106
Int. Cl.⁴ H04N *5/783*, *5/95*
U.S. Cl. 360—10.3 **11 Claims**



1. A magnetic reproducing apparatus comprising:

a pair of main rotatable heads having different azimuth angles;

a pair of auxiliary rotatable heads having different azimuth angles and disposed at different positions from those of said main rotatable heads;

switching timing control means for controlling timing of switching between playback output signals from said main and auxiliary rotatable heads when a magnetic tape runs in a playback mode at a speed different from that at which the magnetic tape runs in a recording mode;

switching means responsive to an output signal of said switching timing control means for replacing a playback output signal from said main rotatable heads with a playback output signal from said auxiliary rotatable heads when the playback output signal from said main rotatable heads is reduced to thereby produce a combined playback output signal;

a variable delay line for delaying said combined playback output signal;

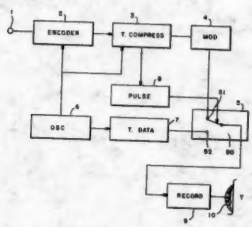
detector means for detecting a variation of a period of a reproduced horizontal synchronous signal separated from said combined playback output signal and producing an error signal indicative of said variation; and

delay time control means responsive to said error signal from said detector means for varying a delay time of said variable delay line thereby to remove any skew generated when the playback output signals from said main rotatable heads are replaced by the playback output signals from said auxiliary rotatable heads.

4,623,941
PCM TYPE RECORD-PLAYBACK SYSTEM

Hiromi Juso, Gose; Kengo Sudoh, and Yukihiko Haikawa, both of Higashihiroshima, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 12, 1985, Ser. No. 744,125
Int. Cl.[4] G11B *5/00, 5/02, 15/18*
U.S. Cl. 360—18 **6 Claims**



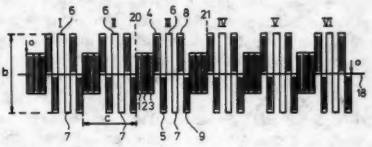
1. A PCM type record-playback system comprising
a digital encoder circuit adapted to digitize an analog primary signal,
a blanking period generation circuit adapted to generate blanking periods in a digitized primary signal obtainable from said digital encoder circuit,
an oscillation circuit adapted to generate a reference clock signal,
a secondary signal generation circuit adapted to generate a secondary signal on the basis of said reference clock signal for indicating positions on a magnetic tape,
a signal synthesizing circuit means adapted to input said primary signal with blanking periods from said blanking period generation circuit and said secondary signal from said secondary signal generation circuit and, being driven in a time-divided manner, to output said primary and secondary signals by inserting said secondary signal in said blanking periods of said primary signal, and
a recording circuit adapted to record a signal from said signal synthesizing circuit means on a track of said magnetic tape,
said system being adapted to concurrently record on said magnetic tape both said analog primary signal by converting it into a digital signal by sampling and quantizing it and said secondary signal for showing a position on said magnetic tape.

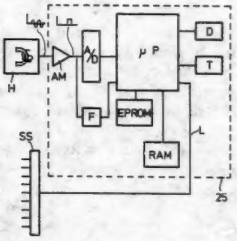
4,623,942
METHOD AND ARRANGEMENT FOR DETECTING ERROR SIGNALS IN A DISK-DRIVE, AND A MAGNETIC TEST DISK THEREFOR

Gerold Kraus, Lahr; Walter Huber, Oberkirch; Joachim Hack, Ludwigshafen; Klaus Schulze-Berge, and Roland Sold, both of Mutterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed May 15, 1985, Ser. No. 734,182
Int. Cl.[4] G11B *5/48*
U.S. Cl. 360—75 **13 Claims**

1. A method for detecting error signals in a magnetic disk drive including a head positioning system, said method comprising the use of a magnetic test disk which has test signals recorded in a plurality of test tracks located in place of recording tracks and distributed over the recording area of the magnetic disk, at least one of said test tracks being predetermined as a reference test track, the test signals in said test tracks being read, deviations of the read signals from their desired position and desired amplitude being determined and mean values being derived therefrom, wherein
said test signals consist of adjustment signals which are recorded alternately on either side of the center line of the recording track and are of the same amplitude and of orientation signals which divide the adjustment signals into groups and whose amplitude differs from that of the adjustment signals,
within each group of adjustment signals, their actual position and actual amplitude are determined and a group mean value is derived therefrom,



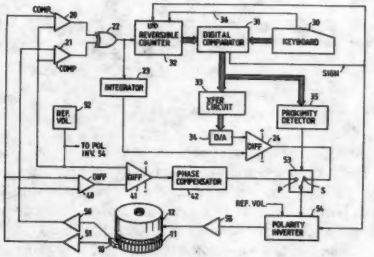


the group mean values of each individual test track are used to calculate a track mean value, the latter is stored, and the track mean values of a number of test tracks are used to calculate an overall mean value, and this is stored.

4,623,943
HEAD POSITIONING APPARATUS USING A DC MOTOR

Yutaka Osada, Fujisawa; Susumu Sakakibara, Sagamihara, and Hideo Nomura, Yokohama, all of Japan, assignors to Victor Company of Japan, Ltd., Japan

Filed Sep. 17, 1985, Ser. No. 777,080
Claims priority, application Japan, Sep. 19, 1984, 59-196429; Sep. 20, 1984, 59-197057
Int. Cl.[4] G11B *5/55*
U.S. Cl. 360—78 **10 Claims**



1. An apparatus for controlling the radial position of a magnetic head on a magnetic record medium, the apparatus including data entry means for generating a command signal indicating the radial position of a desired track on said medium, comprising:
a DC motor responsive to an analog signal for continuously driving said head in radial directions;

a magnetic pole member rotatable with said motor, said member having a plurality of magnetic poles of opposite senses arranged on a circumference thereof in a predetermined relationship with tracks on said medium;

detector means including a magnetic sensor for cooperating with said magnetic poles and generating a pulse signal having pulses corresponding to said tracks and a voltage signal representing the rotational speed of said motor;

counter means for varying a count in response to said pulse signal in an incremental or a decremental count mode depending on a direction indicating signal applied thereto for indicating the position of said head;

control means for deriving a positional difference between the positions of said head and said desired track from said command signal and said count and deriving therefrom said direction indicating signal and a variable speed reference signal as a function of a predetermined nonlinear relationship between said difference and the speed reference signal;

differential amplifier means for generating a speed control signal indicative of a difference between said speed reference signal and said voltage signal; and

polarity inverting means for inverting or noninverting the polarity of said speed control signal depending on said direction indicating signal and on the amplitude of the speed control signal relative to a fixed reference voltage and applying the inverted or noninverted signal to said motor as said analog signal.

4,623,944

MAGNETIC TAPE GUIDE DRUM WITH GROUNDING DEVICE

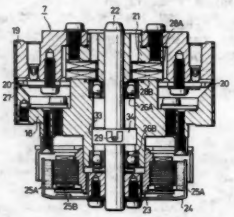
Tatsumaro Yamashita, Miyagi, Japan, assignor to Alps Electric Co., Ltd., Japan

Filed Aug. 2, 1984, Ser. No. 637,165

Claims priority, application Japan, Aug. 2, 1983, 58-119828[U]

Int. Cl.[4] G11B *5/027*

U.S. Cl. 360—84 **7 Claims**



1. In a magnetic tape guide drum for a magnetic video recording and playback apparatus, said drum having a rotary magnetic head and adapted for guiding a magnetic tape travelling spirally about said drum, said drum comprising a rotary drum portion mounting said magnetic head, a stationary drum portion and a shaft secured to said rotary drum portion and supported rotatably by said stationary drum portion for rotating said rotary drum portion, the improvement which comprises said shaft being in electrically conductive contact with said rotary drum portion, and a grounding device provided in said stationary drum portion and held in electrically conductive contact therewith and in sliding electrically conductive contact with the peripheral surface of said shaft so as to provide a grounding path from said rotary drum portion through said shaft, grounding device, and said stationary drum portion.

4,623,945

AUTOMATIC INSERTION/EJECTION LINKAGE FOR A MAGNETIC-TAPE-CASSETTE APPARATUS

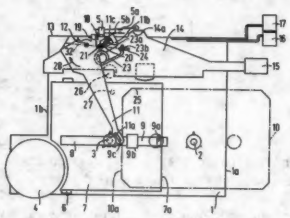
Armin Deutsch, and Henricus M. Ruyten, both of Wetzlar, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 27, 1984, Ser. No. 593,799

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1983, 3312136; Netherlands, Apr. 11, 1983, 8301267

Int. Cl.[4] G11B *15/00*

U.S. Cl. 360—96.5 **2 Claims**



1. A magnetic-tape-cassette apparatus having a linkage for automatically inserting and ejecting a magnetic-tape cassette, said apparatus comprising:

a frame having a pivot spindle disposed thereon,

a cassette holder having an insertion opening for a cassette, and an end position defined in the holder; and a cassette driver, adapted for engaging a cassette inserted into the holder, movably guided in the cassette holder,

a lever pivotally mounted on said spindle, and coupled to said driver,

an actuating rod movably guided in said frame, and an ejection member connected to said rod,

a spring secured to the actuating rod at a first point of attachment, and to said lever at a second point of attachment, said points of attachment being arranged relative to the pivoting spindle so as to form an over-center linkage, following actuation of the ejection member, said spring then pivoting said lever further and ejecting the cassette; said second point of attachment passing through a plane containing the pivoting spindle and the first point of attachment,

characterized in that said spring is connected directly to the actuating rod,

said lever has a slot therein having wall portions forming a control edge and a stop edge,

said actuating rod comprises a pin which undergoes relative movement along a first part of said control edge during insertion of the cassette into the holder, and then along a second part of the control edge arranged such that, under influence of the force exerted on the actuating rod by the spring, said relative movement pivots said lever further until the cassette occupies the end position in the holder,

upon actuation of the ejection member to move the actuating rod in an ejection direction, said pin is urged against a first portion of the stop edge thereby pivoting said lever in a cassette-ejecting direction until said second point of attachment passes through said plane, and is then moved further along said stop edge during pivotal movement due to the force exerted by said spring, thereby ejecting the cassette.

4,623,946

MODE CHANGING MECHANISM FOR CASSETTE TAPE RECORDING AND/OR REPRODUCING APPARATUS

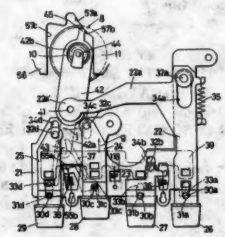
Mitsuru Ida, Saitama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jul. 30, 1984, Ser. No. 635,605

Claims priority, application Japan, Jul. 30, 1983, 58-119650[U]

Int. Cl.[4] G11B *15/10*

U.S. Cl. 360—96.3 13 Claims



1. In a cassette tape recording and/or reproducing apparatus having tape drive means including a transmission member which is shiftable for changing the operating mode of said tape drive means, a mode changing mechanism comprising:

a chassis;

first and second mode selecting slide members mounted on said chassis for movements relative to the latter independently of each other along substantially parallel paths between respective operative and inoperative positions;

a pivot arm member carrying an abutment and said transmission member of the tape drive means and being movable for shifting said transmission member;

stop means for limiting movements of said pivot arm member;

a coupling member straddling said first and second slide members and including a pair of resilient arms between which said abutment is engageable;

first and second actuating members on said first and second slide members, respectively, and being engageable with said coupling member at first and second locations, respectively, on the latter, said first and second locations being spaced apart in a direction transverse to said parallel paths of movement of the slide members; and

a spring connected between said chassis and said coupling member and acting on the latter along a line of force which is intermediate said first and second locations and in a direction for simultaneously urging said coupling member against said first and second actuating members and thereby urging both of said first and second slide members to said inoperative positions thereof;

the movement of a selected one of said slide members toward its operative position causing turning of said coupling member about the actuating member on the other of said slide members with one of said resilient arms acting against said abutment to effect movement of said pivot arm member against said stop means at a position of said transmission member for establishing a corresponding mode of said tape drive means, said pivot arm member engaging said stop means prior to completion of said movement of the selected slide member to its operative position so that, with said selected slide member in said operative position, said one arm is resiliently flexed for continuously urging said transmission member to said position for establishing said corresponding mode.

4,623,947

MAGNETIC HEAD DEVICE

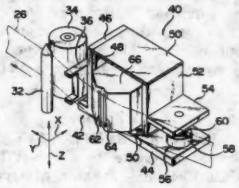
Akihiro Kasahara, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 12, 1984, Ser. No. 588,342

Claims priority, application Japan, Mar. 17, 1983, 58-43097; Mar. 17, 1983, 58-43098

Int. Cl.[4] G11B *5/58, 21/24*

U.S. Cl. 360—109 17 Claims



1. A magnetic head device comprising:

a base;

a magnetic head having parallel elongated recording and reproducing gaps which are mutually spaced in a first direction parallel to a running direction of a magnetic tape between said gaps and positioned for facing the tape surface of said magnetic tape;

a pair of resilient parallel plate portions having one end attached to a portion of said base, said parallel plate portions extending parallel to said first direction to other ends of said parallel plate portions, said parallel plate portions being equal in length and each being shaped so as to be displaceable in the direction of elongation of said gaps, taking said one end thereof as a fulcrum;

a rigid portion connecting said other ends of said parallel plate portions with each other, said base portion and rigid portion being aligned in said first direction, said magnetic head being fixed to said rigid portion, whereby the distance between the other ends of the parallel plate portions is equal to that between the one ends of the parallel plate portions; and

actuating means for displacing said rigid portion in said direction of elongation whereby said parallel plate portions can shift.

4,623,948

SWITCHING AID DEVICE

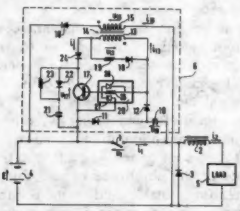
Serge Volut, Villeurbanne, France, assignor to Cem- Compagnie Electro-Mecanique et Compagnie, Paris, France

Filed Aug. 6, 1984, Ser. No. 638,140

Claims priority, application France, Aug. 5, 1983, 83 12961

Int. Cl.[4] H01H *9/30*

U.S. Cl. 361—13 8 Claims



1. A switching arrangement including a switching aid device and a main static switch, said switching aid device including:

a switching aid capacitor connected in parallel with said

main static switch via a loading diode arranged to conduct current in the same direction as said main static switch; and

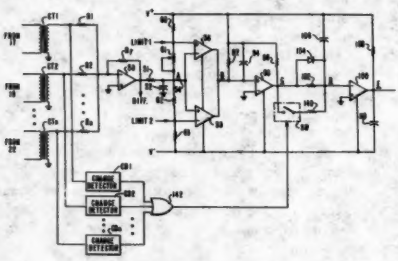
an unloading circuit of said switching aid capacitor connected in parallel with said loading diode and including a primary winding of a transformer having its secondary winding connected to an energy recovery circuit on an electric power source via at least one recitifier, said switching aid capacitor unloading circuit further including, series-connected with said primary winding, a static auxiliary switch and control means for closing said static auxiliary switch in the presence of an inverse voltage at the terminals of said loading diode and for opening said auxiliary switching in the absence of such inverse voltage.

4,623,949

BUS DIFFERENTIAL RELAY

Seymour Salowe, Murrysville Boro; Robert T. Elms, Monroeville Boro, and Richard A. Johnson, Murrysville Boro, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 6, 1985, Ser. No. 773,473
Int. Cl.[4] H02H *7/26*
U.S. Cl. 361—63 **7 Claims**



1. In a power system network including a bus section and a plurality of feeder lines coupled thereto for conducting alternating current through said bus section, each feeder line including a current transformer for measuring the alternating current therethrough and generating a signal representative thereof in both amplitude and periodicity, each current transformer having a limited current amplitude measurement capacity beyond which saturation thereof occurs resulting in the loss of its generated feeder line current signal during saturation, a bus differential relay governed by said generated current signals of said plurality of feeder lines to protect said bus section from an internal fault by interrupting current through said plurality of feeder lines and to safeguard against current interruption from a false indication of an internal fault caused by an external fault on at least one of the feeder lines of said plurality with the corresonding current transformer being saturated during a portion of the periods of said alternating current, said bus differential relay comprising:

first circuit means for summing instantaneously the generated current signals corresponding to the feeder lines coupled to said bus section and for generating a current differential signal representative of said instantaneous current signal sum;

second circuit means for generating two reference amplitude levels which form an amplitude window;

third circuit means for generating a first indication upon the occurrence of the amplitude of said current differential signal extending outside said formed amplitude window and for generating a second indication upon the occurrence of the amplitude of said current differential signal falling within said formed amplitude window;

first timing circuit set by a first indication generation to commence timing over a first time period and, after timing through said first time period, to generate a trip signal to render current interruption through said plurality of feeder lines; and

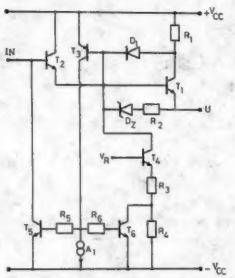
second timing circuit set by a second indication generation to commence timing over a second time period and, after timing through said second time period, to generate a reset signal, said second timing circuit being resettable during said second timing period by a first indication generation to prevent the generation of said reset signal, said first timing circuit being resettable during said first timing period by a reset signal generation to prevent the generation of said trip signal, said first timing period being longer than said second timing period.

4,623,950

PROTECTIVE DEVICE FOR A POWER ELEMENT OF AN INTEGRATED CIRCUIT

Sergio Palara, Bareggio, and Aldo Torazzina, Monza, both of Italy, assignors to SGS-ATES Componenti Elettronici SpA, Milan, Italy

Filed Jan. 30, 1984, Ser. No. 574,964
Claims priority, application Italy, Jan. 31, 1983, 19341 A/83
Int. Cl.[4] H02H *3/42*
U.S. Cl. 361—79 **4 Claims**



1. A protective device for a power element of an integrated circuit, said protective device integrated in said integrated circuit and comprising a circuit means for detecting and processing the value of a current flowing through said power element and a voltage across said power element and for generating a measuring signal in response thereto, and a threshold circuit means which is connected to said circuit means and is activated by said measuring signal when said signal reaches a prespecified limit value and which, after having been activated, generates a control signal for reducing said value of said current flowing through said power element, wherein said threshold circuit means comprises a means for amplifying said measuring signal when said measuring signal reaches said prespecified limit value and wherein said current flowing through said power element after activation of said threshold circuit is lower than said prespecified limit value;

wherein said power element comprises a final power transistor of an integrated amplifier circuit, said transistor having a first type of conductivity and having a first terminal, a second terminal and a control terminal, said control terminal being coupled through a control transistor to an input terminal for receiving a signal to be amplified; and

wherein said detecting and processing circuit means comprises a first diode, a first terminal of which is connected to said second terminal of said final power transistor and to a first terminal of a supply voltage source through a first resistor, and further comprises a second diode of a Zener type, a first terminal of which is connected through a second resistor to said first terminal of said final power transistor, said first terminal of said final transistor being an output terminal of said amplifier circuit, and further comprises a third transistor and a fourth transistor respec-

tively having a conductivity of a second type which is opposite to said first type of conductivity, and a conductivity of said first type, said third and fourth transistors each having a first and a second terminal and a control terminal, said control terminal of said third transistor and said second terminal of said fourth transistor being both connected to a second terminal of said first diode and a second terminal of said second diode, said first terminal of said third transistor and said first terminal of said fourth transistor being respectively connected to said first terminal of said supply voltage source and, through a resistive element, to a second terminal of said supply voltage source, said control terminal of said fourth transistor being connected to a constant voltage reference source; and

wherein said threshold circuit means comprises a fifth transistor, having a conductivity of said first type and having a first terminal, a second terminal and a control terminal, and a constant current source, said second terminal of said third transistor being connected to said second terminal of said supply voltage source through said constant current source and to said control terminal of said fifth transistor through a fourth resistor, said first terminal and said second terminal of said fifth transistor being respectively connected to said second terminal of said supply voltage source and to said input terminal, wherein said means for amplifying said measuring signal comprises a sixth transistor, having a conductivity of said first type and having a first terminal, a second terminal and a control terminal, said control terminal being connected through a fifth resistor to said second terminal of said third transistor, said first terminal of said sixth transistor being connected to said second terminal of said supply voltage source;

wherein said resistive element comprises two resistors connected in series and a junction point between said resistors is connected to said second terminal of said sixth transistor.

4,623,951

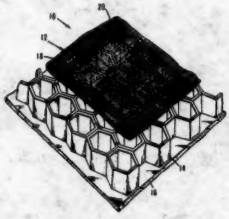
ELECTRICALLY CONDUCTIVE COMPOSITE STRUCTURE

Preston S. DuPont, Northridge; Robert E. Ritter, Palos Verdes, and John P. Stafford, Culver City, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Division of Ser. No. 381,125, May 24, 1982, Pat. No. 4,534,998. This application Aug. 13, 1984, Ser. No. 639,984

Int. Cl.[4] H05F *3/00;* **B32B** *3/12*

U.S. Cl. 361—218 **14 Claims**



9. The combination comprising:

an electrically conductive exposed coating layer together with an otherwise dielectric external surface of a spacecraft carrying said layer and a metallic support electrically connected to said external surface;

said external surface of a spacecraft being a dielectric woven face fabric coupled to metallic honeycomb core;

said coating comprising a mixture of carbon black particles in a thermoset dielectric synthetic polymer resin on the surface, with enough of said carbon black particles in electric contact with each other to form an electric discharge path in said polymer; said coating having a resistance of substantially 6×10^5 ohms per square, said coating layer being coated on and extending through said woven face fabric to said metallic honeycomb core to be electrically connected to the spacecraft ground of the metallic support to discharge surface potential acquired from the charged particle environment of the spacecraft.

4,623,952

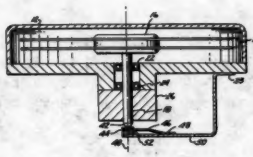
DAMPED STATIC ELIMINATOR FOR DISK DRIVES

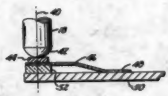
Harold W. Pexton, Moore, Okla., assignor to Magnetic Peripherals Inc., Minneapolis, Minn.

Filed Jan. 28, 1986, Ser. No. 823,234

Int. Cl.[4] H05F *3/00;* **H02K** *7/00;* **F16M** *13/00*

U.S. Cl. 361—220 **2 Claims**





1. A damped contact assembly for electrically grounding the motor shaft of a disk drive to the housing of the disk drive, comprising: a load spring adapted to be fastened to the housing of the disk drive; a damping pad mounted to said load spring in a position which intersects the axis of rotation of said shaft; a gimbal spring mounted to said load spring; and a contact head mounted to said gimbal spring adjacent said damping pad to engage at end of said shaft, whereby said contact head is urged against said shaft end by said load spring and is damped by said damping pad.

4,623,953

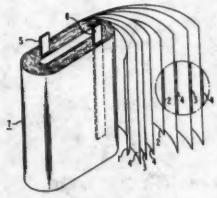
DIELECTRIC FLUID, CAPACITOR, AND TRANSFORMER

Thomas W. Dakin, Boca Raton, Fla., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 1, 1985, Ser. No. 729,371

Int. Cl.[4] H01B *3/24;* **C10M** *101/02*

U.S. Cl. 361—315 **13 Claims**



1. A dielectric fluid consisting essentially of:

(A) about 5 to about 40 molar percent of a vinyl compound selected from the group consisting of vinyl xylene, vinyl toluene, vinyl isopropyl biphenyl, and mixtures thereof;

(B) about 60 to about 95 molar percent of a diluent selected from the group consisting of

(1) mineral oil;

(2) an arene compound having up to six substituent alkyl carbon atoms selected from the group consisting of hydrocarbons, hydrocarbon ethers, and mixtures thereof; and

(3) mixtures thereof, where no substituent chain exceeds 3 carbon atoms in length; and

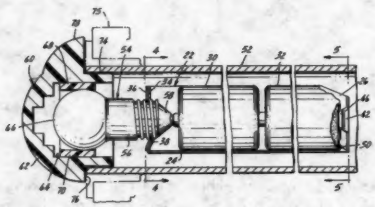
(C) about 0.5 to about 5% of a free-radical polymerization inhibitor, said vinyl compound and said diluent being selected so that said dielectric fluid has a boiling point greater than 150° C., a freezing point less than −40° C., and a dielectric constant less than 3.5.

4,623,954

HANDLEBAR SAFETY LIGHT

Roger A. Schott, Redford, and Lawrence A. Schott, Detroit, both of Mich., assignors to Freedom Industries, Inc., Redford, Mich.

Filed Aug. 8, 1985, Ser. No. 763,648
Int. Cl.⁴ F21V *33/00*
U.S. Cl. 362—72 **7 Claims**



1. A signal light for bicycle and like applications having a handlebar with open tubular ends, said signal light comprising

a rectangular battery shell of electrically conductive sheet metal construction, said shell having a cross section dimensioned for sliding press-fit of longitudinally extending edges of said shell into an open tubular handlebar end,

battery means captured within said shell so as to position battery contacts adjacent to axially spaced ends of said shell,

said shell having a circular opening at one axial end of said shell and at least one tab at the opposing end of said shell projecting centrally into said shell integrally with said shell for electrical contact with the adjacent said battery contact,

a lamp having a base threadably received in said circular shell opening and a bulb carried by said bases externally of said shell, and

a lens having a contoured hollow head mounted on said bulb and a base with a diameter for end abutment with an open handlebar end.

4,623,955

ANO-GENITAL SELF-VIEWING DEVICE

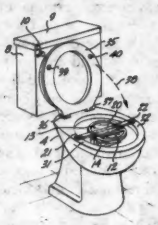
Luis A. Santini, Suite 3F, Condominium Las Torres Sur, Bayamon, P.R. 00619

Filed Oct. 29, 1984, Ser. No. 665,587
Int. Cl.⁴ F21V *33/00*
U.S. Cl. 362—135 **11 Claims**

1. An ano-genital self-viewing device particularly adapted to be used in conjunction with a toilet comprising:

reflective means for viewing virtual images of the ano-genital region of a person seated on the toilet;

means for illuminating the ano-genital region;



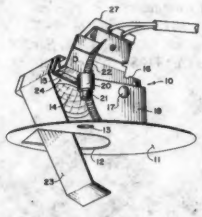
means to support the device to the toilet so that said reflective means and illuminating means are positioned generally below the ano-genital region.

4,623,956

RECESSED ADJUSTABLE LIGHTING FIXTURE

Mario W. Conti, 7044 Estrella de Mar Rd., Carlsbad, Calif. 92008

Continuation of Ser. No. 317,480, Nov. 2, 1981, abandoned. This application Aug. 6, 1984, Ser. No. 609,283
Int. Cl.⁴ F21S *1/02*
U.S. Cl. 362—148 **12 Claims**



1. A recessed, adjustable, lighting-fixture for general purpose illumination, said fixture comprising:

a base member for attachment to a static structure, said base member having an opening therethrough for the passage of light;

a platform affixed to the base member;

a lamp assembly including a bulb and a reflector affixed to the platform, said lamp assembly having a convergent, controlled light beam path where substantially all the light passes through said opening; and

reflecting means mounted at an angle of about 45 degrees with respect to the light beam path, said reflecting means being attached to the platform in such a position that it will adjustably protrude through the opening in the base member and being positioned so that it reflects the controlled light beam path, said reflecting means being located near a focal point of said reflector.

4,623,957

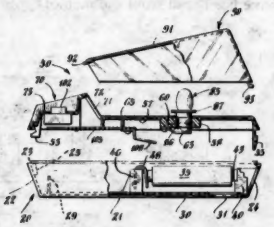
BATTERY POWERED AUXILIARY LIGHTING FIXTURE WITH A TIMER

Ralph F. Moore, Greenwich, and Francis G. Marshall, Cheshire, both of Conn., assignors to The Bridgeport Metal Goods Manufacturing Company, Bridgeport, Conn.

Filed Oct. 19, 1984, Ser. No. 662,575

Int. Cl.[4] F21L *7/00*

U.S. Cl. 362—200 **19 Claims**



1. An auxiliary lighting fixture comprising:

(A) a base adapted for being hung on a vertical wall and having at least one battery received therein, and further having a first pair of conductive strips respectively contacting the battery terminals and electrically presenting the battery terminals;

(B) a housing releasably secured on the base, the housing mounting a light bulb and a translucent lens positioned over the light bulb; and

(C) switch means mounted on the housing and electrically conductive means for completing a circuit including the battery, light bulb and switch means, the electrically conductive means including a second pair of conductive strips positioned on the housing to each respectively contact one of the first pair of conductive strips when the housing is secured on the base, thereby connecting the battery into the circuit.

4,623,958

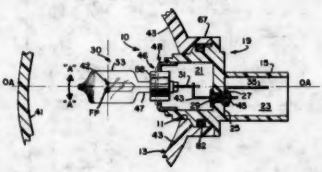
REPLACEABLE AUTOMOBILE HEADLIGHT LAMP UNIT

John R. Van der Linde, Deering; James P. Szep, Peterborough, and David Dayton, Bow, all of N.H., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jan. 15, 1985, Ser. No. 691,803

Int. Cl.[4] F21V *19/00*

U.S. Cl. 362—267 **16 Claims**



1. In a lamp unit wherein said lamp unit includes an electrically insulative holder for being positioned within said opening and defining a cavity therein and an electriic lamp adapted for being positioned within said holder, said lamp including an envelope having a filament structure therein and a sealed end portion having at least two lead-in wires projecting therefrom, said filament structure being oriented within said reflector of said automobile headlight when said holder is positioned within said opening, the improvement comprising:

a clamp member secured about said sealed end portion of said envelope of said electric lamp at a precise location relative to said filament structure, said sealed end portion of said envelope including means formed therein for aligning said clamp member at said precise location; and

an insert member located at a predetermined depth within said cavity of said insulative holder and including an aperture therein, said clamp member being located an established depth within said aperture of said insert member and fixedly secured to said insert member such that said filament structure will be oriented within said reflector in a precise manner relative thereto when said insulative holder is positioned within said reflector opening.

4,623,959

APPARATUS, PARTICULARLY FOR TRANSLOADING VEHICLES FOR PROVIDING A FIELD OF VIEW FOR CARRYING OUT WORK DURING DARKNESS, PARTICULARLY AT MILITARY FIELD TRANSLOADING POSTS

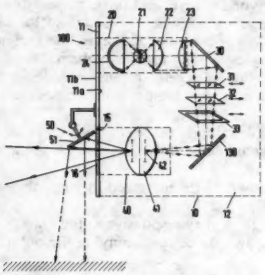
Georg C. Ostermann, Hamburg, Fed. Rep. of Germany, assignor to Ostermann Apparatebau Kiel GmbH, Fed. Rep. of Germany

Filed Dec. 10, 1985, Ser. No. 807,423

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1985, 3537114

Int. Cl.[4] F21S *1/00*

U.S. Cl. 362—293 **4 Claims**

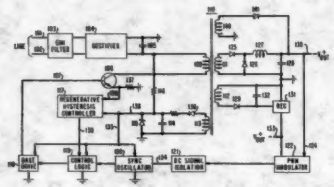


1. An apparatus, particularly for transloading vehicles, such as fork lift trucks and the like, for providing a field of view for carrying out work at night, particularly at military field transloading posts, wherein, the apparatus comprises an apparatus casing with a front plate, in whose interior in the upper region of the rear surface of the front plate is provided a lamp housing with a light source, a condenser lens connected upstream thereof and detecting the complete irradiated light flux and a front lens located in the optical path of the light source and to which is connected two plane mirrors which deflect the optical path twice by 90° and which are spaced from and superimposed with respect to on another, whereby between the two plane mirrors in the optical path are arranged diaphragms and/or filters which can be pivoted into and out of the same by means of electromotive or electromagnet drive means or the like and below the lamp housing is provided a further case receiving exit optics for imaging the lamp coil filament in the entrance pupil of the exit optics through the front lens and wherein in the optical path of the exit optics in the front plate is provided a light exit port covered by means of a glass disk.

4,623,960
BIAS POWER SOURCE ENERGIZED BY TERTIARY WINDING INCLUDING HYSTERESIS CHARACTERISTIC FOR DISABLING THE POWER SWITCH WHEN A MINIMUM BASE DRIVE SIGNAL CAN NO LONGER BE MAINTAINED

Wing K. Eng, Stanhope, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 15, 1984, Ser. No. 661,137
Int. Cl.[4] H02M *3/335*
U.S. Cl. 363—21 **12 Claims**



1. A power switching converter circuit in which auxiliary power is derived from a tertiary winding of a power transformer comprising:

a power switching transistor,

drive circuitry for applying bias signals to the power switching transistor,

means for energizing the drive circuit from the tertiary winding including:

hysteretic means for disabling the drive circuitry in response to a voltage level of the tertiary winding,

the hysteretic means being operative for disabling the drive means when a voltage of the tertiary winding drops below a first voltage level and further operative for re-enabling the drive means when a voltage of the tertiary winding exceeds a second voltage level, the second voltage level being greater than the first voltage level,

wherein the hysteretic means includes a bistable circuit having an output logic state responsive to a sensed voltage level,

the bistable circuit comprising:

a voltage divider coupled to sense the voltage of the tertiary winding,

a breakdown diode energized by the voltage of the tertiary winding, and

switching circuitry responsive to the voltage divider and the breakdown diode for supplying the output logic state.

4,623,961
PROGRAMMABLE CONTROLLER HAVING AUTOMATIC CONTACT LINE SOLVING

Ralph E. Mackiewicz, Madison Heights, Mich., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 7, 1984, Ser. No. 587,092
Int. Cl.[4] G06F *15/46, 9/06*
U.S. Cl. 364—147 **15 Claims**

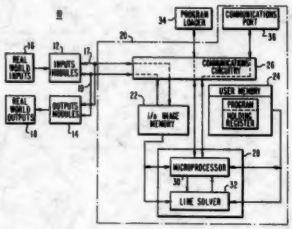
1. A programmable controller for solving a ladder diagram having contact elements and noncontact elements and including a processor for controlling the functioning thereof and for utilizing the noncontact elements to provide a solution related to the ladder diagram, comprising:

memory means for storing the elements of the ladder diagram in a representative form and for storing a status corresponding to each element of the ladder diagram in a representative form;

ladder diagram contact solving means interconnected with the processor and the memory means for utilizing the contact elements of the ladder diagram and the corresponding contact element status stored in the memory means for providing an output related to the solution of the ladder diagram to the processor by solving the contact elements of the ladder diagram independently of the processor;

element read means for continuously reading each element of the rung of the ladder diagram and the corresponding status thereof from the memory means and transferring the read element and status to the ladder diagram contact solving means;

means for enabling the ladder diagram contact solving means whenever a contact element and corresponding status have been read from the memory means; and



noncontact element sensing means for sensing noncontact elements that have been read from the memory means, upon sensing of a noncontact element, the noncontact element sensing means:

inhibiting operation of the element read means;

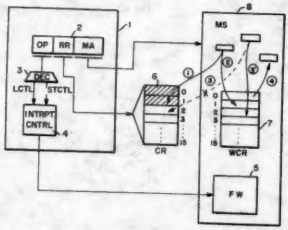
inhibiting the ladder diagram contact solving means from solving the read noncontact element and its corresponding status; and

actuating the processor to solve the sensed noncontact element.

4,623,962
REGISTER CONTROL PROCESSING SYSTEM

Toshio Matsumoto, Kawasaki; Motokazu Kato, Sagamihara; Kiyosumi Sato; Yoshihiro Mizushima, both of Kawasaki, and Katsumi Ohnishi, Kawagoe, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 30, 1983, Ser. No. 509,609
Claims priority, application Japan, Jun. 30, 1982, 57-113470
Int. Cl.[4] G06F *9/00*
U.S. Cl. 364—200 **4 Claims**



1. A processing system comprising:

at least one control register;

a memory, respective addresses of which provide for a virtual register corresponding 1:1 to each said control register and for at least one further virtual register;

means for respectively detecting a load control instruction and a store control instruction; and

means for writing the same data into both the respective control register and the corresponding virtual register responsive to said load control instruction, and for reading

only from the respective virtual register responsive to said store control instruction.

4,623,963

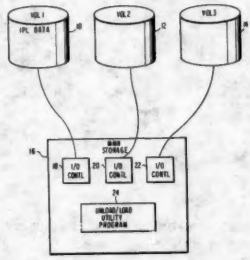
DEVICE INDEPENDENT DATA TRANSFER

Grady H. Phillips, Colleyville, Tex., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Jul. 27, 1983, Ser. No. 517,692

Int. Cl.[4] C06F *13/00*

U.S. Cl. 364—300 **5 Claims**



1. A method of organizing and transferring intermingled user and system data from one set of computer storage devices to another, said method comprising:

organizing all system and user data associated with a computer operating system in a manner independent of the number or characteristics of the set of computer storage devices and of the structure and content of the data;

converting and condensing all system and user data associated with said computer operating system into a logical and continuous data stream;

storing said data after converting and storing said data after converting and condensing on intermediate sequential access media; and

transferring said data stored on said intermediate sequential access media to the same or another set of computer storage devices, formatted and organized according to the characteristics of said same or another set of computer storage devices but without regard for original assignments of said data on said computer storage devices.

4,623,964

HOMOGENEOUS HIERARCHIAL COMPUTER BUSINESS SYSTEM

Marion E. Getz, Raleigh, N.C.; Christopher J. Harris, Hitchin, England; Philip J. McConnell, Barnet, England; Mark L. Norton, London, England; John P. Garrett, Cheshunt, England, and Angela I. Harding, Broxbourne, England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 22, 1982, Ser. No. 452,364

Claims priority, application European Pat. Off., Dec. 23, 1981, 81306072.0

Int. Cl.[4] G06F *15/24, 15/00*

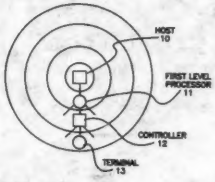
U.S. Cl. 364—401 **14 Claims**

1. In a homogeneous hierarchial real time transaction, consolidated auditing and side processing business system having a host processor coupled to a first level of plural processors, each first level processor being coupled to plural controllers in a second level, and each of said controllers being coupled to plural terminals in a third or transaction interface level; the processors and controllers maintaining complete copies of a system wide parameter set for the control of transactions interfaced with the system means, the aforesaid structure of interconnected processors being a tree structure for the purposes of communicatng between the host processor, the other processors and their associated storage for updating of the parameter set copies and the concentration of transaction data for consolidating auditing purposes, the terminals each including working storage maintaining input/output control programs and providing temporary storage for transaction data en route from the terminals to the supporting controllers, the improvement comprising:

(a) each of said terminals having means to process a complete individual transacting, element by elcment, within said terminal's working storage;

(b) each of said terminals being further adapted to request from its supporting controller parameters particularly appropriate to a current transaction element when said parameters are not resident in said working storage and to retain said parameters in said working storage for the duration of a transaction;

(c) each of said terminals also being adapted to maintain, for the duration of a transaction, an account of said transaction in the form of a plurality of records dominated by parameter rather than transaction element;



(d) each first level processor incorporating a tandem pair of means, the first of said pair of means interfacing with its processor and the storage thereof to trap system user interfacing messages, construct and enqueue tasks comprised of individual such messages including processing programs appropriate thereto, and to dequeue, route and dispatch processed messages; the second of said pair of means dequeueing, processing and re-enqueuing the tasks established by the first means, the first means being able both to route processed messages to any user interface of the system, into side processes of an associated first level processor and to force certain such processed messages into a side processing user interface of that first level processor.

4,623,965

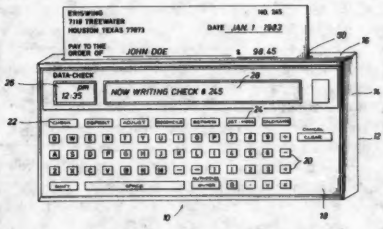
ELECTRONIC CHECKBOOK

Donald K. Wing, 7118 Treewater, Houston, Tex. 77072

Filed Feb. 27, 1984, Ser. No. 583,863

Int. Cl.[4] G06F *15/30*

U.S. Cl. 364—408 **15 Claims**



1. A portable, hand-held check writing apparatus comprising:

(a) an external housing defined by a horizontally extending bottom, side walls extending vertically from said bottom and a horizontally extending top member secured to said

side walls, said housing being open at one end and including a slot extending across one of said side walls opposite said open end of said housing;

(b) keyboard means located on said top member for entry of alpha-numeric data;

(c) computer means for receiving, storing and retrieving data;

(d) print means for printing payee, check amount and memo information on the face of a check, said print means including a print head moveable horizontally and vertically relative to the face of the check;

(e) a removable check cartridge removably operatively connected to said housing for storing a quantity of checks stacked one on the other;

(f) drive means for moving said print head across the face of the check held stationary in said check cartridge for printing information thereon;

(g) ejector means for sequentially ejecting a single check from the stack of checks through said slot in one of said side walls;

(h) display means for visually displaying data; and

(i) circuit means operatively connecting said computer means to said keyboard means, print means, drive means, ejector means and display means.

4,623,966

COLLISION AVOIDANCE APPARATUS

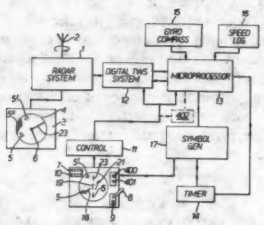
James P. O'Sullivan, Purley, England, assignor to Sperry Limited, Cobham, England

Filed Feb. 15, 1984, Ser. No. 580,510

Claims priority, application United Kingdom, Feb. 19, 1983, 8304686

Int. Cl.[4] G06F *15/50*; G01S *7/22*

U.S. Cl. 364—461 **14 Claims**



1. In apparatus for assessing maneuvers of a first vehicle relative to other vehicles comprising sensing means for providing signals representative of the positions and velocities of the other vehicles relative to the first vehicle, symbology generating means responsive to said signals for generating symbology respectively associated with the other vehicles, and display means coupled to the symbology generating means for displaying the symbology relative to the position of the first vehicle so as to provide indicia to assess maneuvers of the first vehicle which will avoid collision with the other vehicles, and which will ensure that the first vehicle will not pass closer to the other vehicles than a predetermined distance for all relative positions and velocities thereof, said symbology generating means comprising means for generating symbology associated with each of the other vehicles in all encounter circumstances with at least a final escape point (FEP) which, if reached by the first vehicle, will allow the first vehicle still to avoid the associated other vehicle by said predetermined distance, and two vectors, originating at the FEP, which if taken by the first vehicle at the FEP, will take the first vehicle clear ahead or clear astern of said other vehicle by said predetermined distance.

4,623,967

COMPUTER-CONTROLLED SWITCHING APPARATUS

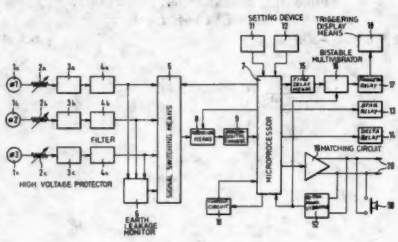
Hubert L. Naimer, Nuvola Bianca, CH-6612 Ascona, Switzerland

Filed Jul. 15, 1983, Ser. No. 513,814

Claims priority, application Austria, Jul. 29, 1982, 2930/82

Int. Cl.[4] G08B *21/00*; H02H *3/08*; G06F *15/56*

U.S. Cl. 364—483 **7 Claims**



1. A computer-controlled switching apparatus for controlling power switching elements supplying power to a system such as a motor, transformer or the like, according to various computer programs for said system, said apparatus comprising:

(a) at least one sensor for monitoring the current consumption of the system;

(b) a microprocessor connected to said at least one sensor through an analog-digital converter, said microprocessor sequentially computes from the signals supplied by said at least one sensor, according to the various programs, data representing parameters of the system and compares the computed data with pre-selected limit and warning values to produce switching instructions and warning signals when said values are achieved;

(c) a coding means included in said microprocessor for coding the computed data and output the same to an output;

(d) a decoder connected to the output of said coding means through a transmission path for switching the computed data corresponding to one of the programs through to a display means, said decoder including two interconnected signal switching means of which one switches through the incoming coded signals, in accordance with the code, to one of a plurality of outputs, and the second selectively connects to its output, one of the inputs connected to the outputs of the first signal switching means, the output of said second switching means is connected to said display means; and

(e) a manually operated instruction signal generator for supplying a switching signal to said decoder to change the switched-through data to that corresponding to another one of the programs, said second signal switching means having a control input connected to said instruction signal generator.

4,623,968

STRUCTURED DESIGN AND DECENTRALIZED CONTROL OF PRODUCTION INSTALLATIONS

Manfred Niese, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 9, 1983, Ser. No. 521,771

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1982, 3232401

Int. Cl.[4] G05B *11/32*; G06F *15/46*

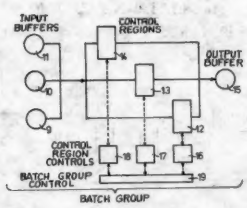
U.S. Cl. 364—500 **13 Claims**

1. In a process for controlling a chemical production installation for carrying out a complete process which permits division into a plurality of regions of predetermined volume flows and modes of operation, comprising:

dividing the complete process control into control regions

each having a plurality of modes of operation and in which the desired volume flow of each control region is predetermined;

decoupling the control regions from each other by providing input and output buffers for the volume flow therebetween;



controlling each control region independently of the other control regions by specifying a single one of the plurality of modes of operation and a single one of a plurality of operating values, wherein each control region has a predetermined flow path corresponding to each mode of operating and predetermined process parameters corresponding to each operating value.

4,623,969

ELECTRONIC TEMPERATURE CONTROLLER FOR HOUSEHOLDING

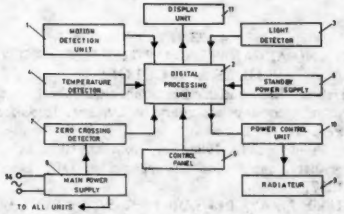
David Bensoussan, 5170, Hingston, Montreal, Quebec, Canada (H3X 3R4), and Don Tardio, 2569 rue Taillon, apt: #4, Montreal, Quebec, Canada H1L 4S7

Filed Jan. 5, 1984, Ser. No. 568,392

Claims priority, application Canada, Jan. 7, 1983, 419062

Int. Cl.[4] G05D *23/00;* **G05B** *15/02*

U.S. Cl. 364—505 **23 Claims**



1. An electronic controller for controlling the supply of electrical power to an electrically controlled device in order to modify an ambient temperature, said controller comprising:

a thermal sensor for generating an electrical signal having at least one characteristic varying according to the ambient temperature;

at least one detector selected from the group consisting of motion detectors capable of generating another electrical signal having at least one characteristic varying according to the presence or absence of motion in a detection field, and light detectors capable of generating a further electrical signal having at least one characteristic varying according to the luminosity in the detection field;

a threshold detector associated with each motion detector, said threshold detector giving as output, a binary number indicative of the presence or absence of motion in the detection field of said motion detector;

a hysteresis comparator assoicated with each light detector, said comparator giving an output, a binary number indicative the presence or absence of light in the detection field of said light detector;

a programmable memory unit;

means for loading the memory of said unit with a program of pre-selected temperatures which depend on the binary number given by the threshold detector associated with each motion detector and the binary number given by the hysteresis comparator associated with each light detector;

means for receiving output electrical signals from said memory, said electrical signals being representative of temperatures corresponding to the binary number given by the threshold detector associated with each light detector;

means for displaying on a display unit the ambient temperature and signals representative of the binary number given by the threshold detector associated with each motion detector and the binary number given by the hysteresis comparator associated with each light detector;

means for receiving the electrical signals corresponding to the ambient temperature and those corresponding to the pre-selected temperatures in said memory and for generating, through a regulator unit, a control signal in order to control the duration of power supply to the temperature modifying device, said control signal being a width modulated pulse whose beginning and ending are synchronized to a zero crossing detector connected to the main power supply of the temperature modifying device; and

means for limiting the minimum and the maximum values of said pre-selected temperatures.

4,623,970

ELECTRONIC EQUIPMENT WHICH OUTPUTS DATA IN SYNTHETIC VOICE

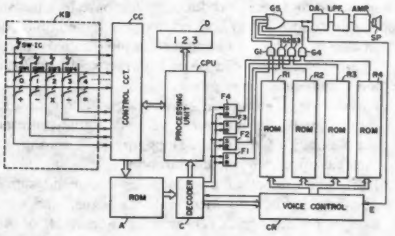
Shigeru Toyomura, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 657,059, Oct. 3, 1984, abandoned, which is a continuation of Ser. No. 483,748, Apr. 15, 1983, abandoned, which is a continuation of Ser. No. 203,443, Oct. 3, 1980, abandoned. This application Jan. 15, 1986, Ser. No. 818,896

Claims priority, application Japan, Nov. 7, 1979, 54-143216

Int. Cl.[4] G10L *5/00*

U.S. Cl. 364—513.5 **12 Claims**



1. An electronic device comprising:

a voice memory for storing a plurality of digital signals, each signal representing one of a plurality of kinds of voice information which information has the same meaning, each kind of voice information having a different sound quality;

an information memory for storing information to be produced as output;

selecting means for selecting one of said digital signals having a desired sound quality, said selecting means comprising a condition memory for storing a selecting condition for said selecting means selecting said ones of said digital signals in accordance with said condition stored in said condition memory; and

output means operable in response to said selecting means for utilizing said selecting digital signals to produce as a

synthetic voice output at least a portion of said information from said information memory.

4,623,971

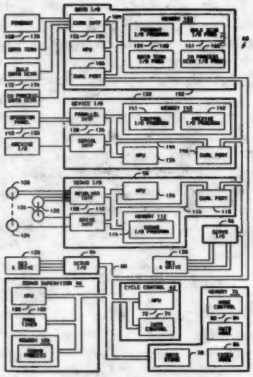
MACHINE CONTROL WITH MOTOR VELOCITY CONSTRAINT

LaVerne K. Ailman, Lebanon; Danny E. Riggen, Middletown, and Ronald L. Tarvin, Cincinnati, all of Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Jun. 30, 1983, Ser. No. 509,987

Int. Cl.[4] G05B *11/32, 13/00;* B25J *11/00*

U.S. Cl. 364—513 12 Claims



1. A method for controlling motion of a function element carried by a machine having a plurality of movable members including at least one member pivoting about an axis of rotation and actuators for effecting motion of the members, the motion of the fuction element being described by a continuous path of a point associated with the function element between two locations and being produced in response to input signals representing coordinate values relative to a rectangular coordinate system of the locations and further input signals repersenting a path velocity of said point between said locations, the method comprising the steps of:

(a) producing an increment velocity signal in response to the input signals, the increment velocity signal representing the velocity of the point along the path during a time interval of predetermined duration;

(b) producing a set of machine axes command signals in response to the increment velocity signal, the machine axes command signals representing increments of motion of machine members relative to their respective axes of motion during the time interval;

(c) producing projected velocity signals in response to the machine axes command signals, the projected velocity signals representing velocities of the machine members relative to their respective axes in a time interval subsequent to the interval during which the projected velocity signals are produced;

(d) comparing the projected velocity signals to limit signals, each limit signal representing a limit value of velocity of a machine axis;

(e) iterating steps (a) through (d) to effect a series of increment motions of the point along the path between the locations; and

(f) reducing the increment velocity signal for an iteration subsequent to an iteration in which a projected velocity signal is detected to exceed a limit signal.

4,623,972

HALF-TONE DOT IMAGING

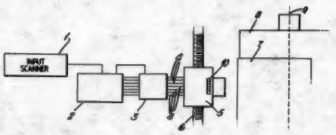
Samuel E. Darby, Harrow, and George C. Manley, North Harrow, both of England, assignors to Crosfield Electronics Limited, London, England

Filed Apr. 25, 1985, Ser. No. 727,154

Claims priority, application United Kingdom, Apr. 27, 1984, 8410861

Int. Cl.[4] H04N *1/23, 1/40*

U.S. Cl. 364—526 8 Claims



1. A method of generating a half-tone dot representation of an original image which has been previously scanned into one or more colour separations each comprising a plurality of cells, each cell being digitally encoded in accordance with the color density of the original image at that position, the method comprising for one or more of said colour separations exposing a record medium to a plurality of scanning beams arranged side by side, said scanning beams being controlled together at a first rate, during relative movement between the scanning beams and the record medium, in response to the digital information and half-tone dot information to generate a plurality of half-tone dots, each dot corresponding to one or more of the plurality of cells; and for each cell at the boundary of an image portion modifying said plurality of scanning beams:

(i)a together at a second, higher rate, or

(i)b in groups of one or more, or

(i)c in groups of one or more and at a second, higher rate, and

(ii) in response to colour density information partly corresponding to that cell and partly corresponding to one or more adjacent cells.

4,623,973

METHOD AND APPARATUS FOR THE RECOGNITION OF HUES AND COLORS

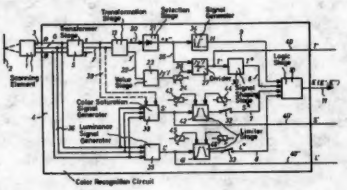
Ingo Hoffrichter, Kiel, and Eggert Jung, Schoenberg, both of Fed. Rep. of Germany, assignors to Dr. Ing. Rudolf Hell GmbH, Fed. Rep. of Germany

Filed Dec. 12, 1984, Ser. No. 680,910

Claims priority, application European Pat. Off., Dec. 14, 1983, 83 112577

Int. Cl.[4] G06F *15/70;* G01J *3/50;* G03F *3/08;* G01N *21/25*

U.S. Cl. 364—526 23 Claims



23. A method for recognition of hues wherein a recognition region for a hue to be recognized is defined within a color space and with which a determination is made by opto-electronic scanning of a color surface as to whether hues of the scanned colors fall into the defined recognition region or not, comprising the steps of:

(a) illuminating the colored surfaces to be investigated;

(b) acquiring received intensities of three primary colors as measured color values;

(c) converting the measured color values R_0, G_0, B_0 or R, G, B into chrominance values x'_0, y'_0 or x', y' of an X'Y' color coordinate system in a chrominance plane of a chrominance/luminance color space;

(d) selecting and forming the chrominance values;

(e) defining the hue recognition region for a hue to be recognized;

(f) forming a hue signal T' from the selected chrominance values;

(g) generating an auxiliary control signal H; and

(h) acquiring a hue recognition signal E' from the auxiliary control signal H and the hue signal T', said hue recognition signal E' being generated when hues of a scanned color fall into the recognition region.

4,623,974

METHOD AND APPARATUS FOR SELF-MONITORING OF MICROCOMPUTER-CONTROLLED NETWORK DEVICES IN PARTICULAR IN MOTOR VEHICLES

Helmut Denz, Stuttgart; Peter Etzold, Baltmannsweiler; Wolfgang Gröschel; Günther Kaiser, both of Stuttgart; Heinz Kraemer, Wernau; Werner Nitschke, Ditzingen, and Martin Zechnall, Schwieberdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

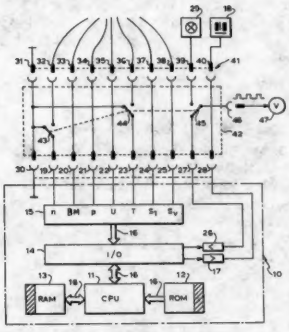
PCT No. PCT/DE82/00149, § 371 Date Aug. 24, 1983, § 102(e) Date Aug. 24, 1983, PCT Pub. No. WO83/02836, PCT Pub. Date Aug. 18, 1983

Continuation of Ser. No. 530,573, Aug. 24, 1983, abandoned. This PCT application Jul. 15, 1982, Ser. No. 824,935

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1982, 3204003; May 26, 1982, 3219650

Int. Cl.[4] G06F *15/20*

U.S. Cl. 364—551 **23 Claims**



1. In a motor vehicle having

at least one network device (**10, 18**) and a microcomputer (**11, 12, 13**), including a working memory (**13**) and an error indication output means (**26, 29**), said microcomputer controlling said network devices (**10, 18**), and a plurality of transducer input terminals (**19–26, 32–38**) applying signals to said microcomputer,

a method, for producing error indication signals, which can be indicated on simple and inexpensive signal indication devices, from said microcomputer-controlled network devices (**10, 18**), which, in accordance with applied transducer signals, execute specified functions (**60**), and, upon detecting (**62**) an error, store (**63**) a corresponding data word in memory (**13**),

comprising the steps of:

manually actuating at least one switch (**43,44**) which causes a predefined abnormal condition on at least one of said transducer input terminals (**19–26, 32–38**);

converting, in response to said abnormal condition, the data word into at least one electrical signal pulse (**70,75**) on said error indication output means (**26, 29**), and

detecting said pulse by measuring (**47**) at least one of the current and voltage.

4,623,975

METHOD AND APPARATUS FOR DETECTING THE PROFILE AND FEEDING STATE OF PAPER SHEETS

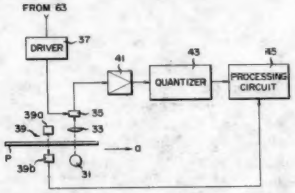
Tomio Kagami, Kawasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 17, 1982, Ser. No. 442,413

Claims priority, application Japan, Nov. 20, 1981, 56-185250; Nov. 20, 1981, 56-185251; Nov. 20, 1981, 56-185252; Aug. 13, 1982, 57-139762; Aug. 23, 1982, 57-144852; Aug. 23, 1982, 57-144853

Int. Cl.[4] G01B *11/04*; G06F *15/36*

U.S. Cl. 364—560 **31 Claims**



1. An apparatus for detecting the dimensions of a paper sheet comprising:

conveyance means for conveying sheets of paper in a feeding direction along a predetermined conveyance path;

light source means, disposed on a first side of the conveyance path, for directing light toward a paper sheet conveyed along said conveyance path by said conveying means;

light receiving means, disposed on a second side of the conveyance path opposing said source means, for receiving light emitted from the light source means which passes across said path;

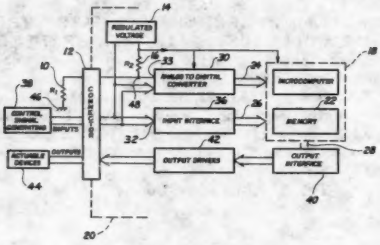
line sensing means, optically coupled to said light receiving means, for selectively scanning a line perpendicular to the feeding direction of said conveyed sheet, said line including at least first and second distinct view field regions separated from one another by the center of said path, and for producing a pair of distance values indicating the distances opposing edges of a conveyed sheet project into said first and second regions, respectively; and

digital signal processing means for controlling the line sensing means to scan a prescribed plurality of times along said line as said sheet is conveyed along said path to thereby produce a sequence of pairs of said distance values, for summing each of said pairs of values in said sequence with a predetermined constant value to produce a sequence of width values W_1, W_2, $W_3 \ldots W_n$ representing the width of said conveyed paper sheet at a corresponding plurality of positions along said sheet, for selecting the width values W_i from said sequence (i=1 through n) falling within the range $W_s-\Delta W \leqq W_i \leqq W_s+\Delta W$, where W_s denotes a nominal width value of said paper sheet and ΔW denotes an allowable deviation of the width of said paper sheet from said nominal value W_s, for computing the average width value of said sheet from said selected with value, and for comparing said average width value with a reference width value, said average width value indicating the overall width of the paper sheet.

4,623,976
AUTOMATIC CALIBRATION APPARATUS FOR AN AUTOMOTIVE CONTROL SYSTEM

Ralph W. Carp, Newport News, and Mark C. Harvey, Yorktown, both of Va., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Mar. 16, 1984, Ser. No. 590,320
Int. Cl.[4] G01L *25/00*
U.S. Cl. 364—571 **2 Claims**



1. An automatic calibration apparatus for an automotive control system utilizing a vehicle mounted electronic control unit having a microprocessor based control system including an addressable memory said apparatus comprising:

a voltage divider circuit having a first resistor and a second resistor said first resistor having a fixed value is located in the vehicle mounted electronic control unit and connected to a regulated voltage supply and said second resistor having one of a plurality of values, said one value is unique to the vehicle configuration, is mounted on the vehicle;

connector means for cable connecting said first and second resistors forming a junction between said first and second resistors of said voltage divider;

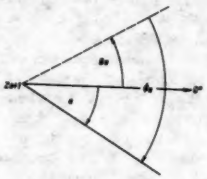
an analog-to-digital converter located in the electronic control unit and electrically connected to said junction for generating a digital signal in response to the voltage at said junction; and

a plurality of addressable calibration tables stored in the memory wherein each table corresponds to one particular vehicle configuration, one of said tables being selected by said digital signal to automatically provide the calibration data required to calibrate the electronic control unit for the vehicle on which the electronic control unit is mounted.

4,623,977
METHOD AND APPARATUS FOR LINEAR INTERPOLATION

Ricky J. Schrieber, Great Neck, N.Y., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Sep. 10, 1984, Ser. No. 649,095
Int. Cl.[4] G06G *7/30*
U.S. Cl. 364—577 **18 Claims**



1. A method for linear interpolation of coordinate points between first and second end points, to produce coordinates on a straight line outline and where said coordinates are located on a coordinate system having a first coordinate direction and second coordinate direction and encoded in machine readable data words of radix "r", corresponding to the order of values for designated positions in said data words, comprising the steps of:

(a) encoding a first data word of "N" positions corresponding to the distance between the said first and second end points in the said first coordinate direction and placing said first data word into a first machine location,

(b) encoding a second data word of "M" bits corresponding to the distance between said first and second end points in said second coordinate direction and placing said second data word into a second machine location,

(c) determining the number of available positions, between the most significant position of said first data word and the most significant position of said first machine location, available for shifting said first data word in a first direction of the most significant positions of said first machine location,

(d) shifting said first data word by a maximum number of positions, equal to the said number of available positions in said first direction and the number of positions corresponding to the number of significant positions used to encode said second data word, and increasing the scale of said first data word by a scale factor related to the number of said positions shifted,

(e) deriving a third data word indicative of said second data word in said second machine location divided into said first data word shifted according to step (d),

(f) encoding data words indicative of the coordinate of said straight line in said second coordinate direction,

(g) for respective ones of said data words encoded according to step (f) encoding multiples of said third data word, which are related to a respective coordinate in said first coordinate direction, on said straight line,

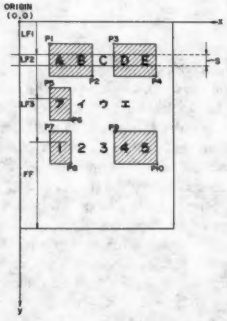
(h) reducing the scale of said multiples of said third data words produced in step (g) to the scale of the first data word of step (a), prior to said shifting of step (d)

(i) encoding said third data words produced in step (h) with respective coordinates in said second coordinate direction to produce said coordinates on said straight line.

4,623,978
PRINT CONTROL APPARATUS HAVING LINE BUFFER

Hiroyuki Aoki, Hanno, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 29, 1985, Ser. No. 696,100
Claims priority, application Japan, Jan. 31, 1984, 59-15475; Jan. 31, 1984, 59-15498
Int. Cl.[4] B41B *27/08*
U.S. Cl. 364—519 **2 Claims**



1. A print control apparatus of a printer which is connected

to a host computer to print an image in accordance with data transmitted from said host computer, comprising:

a character pattern memory having a character pattern;

a line buffer for storing a print image in units of lines;

a character image generator for receiving a character code and developing a character image into said line buffer;

a character and figure combining controller;

a figure image generator for receiving a parameter of the figure data and ORed-writing the figure image on the character image in said line buffer in response to a control signal from said character and figure combining controller; and

a print and line feed controller for receiving data from said host computer and controlling said character image generator, said figure image generator and said character and figure combining controller in such a manner that printing and line feeding are performed so as to print one-line characters and figures on the same line with one scanning;

said character and figure combining controller for analyzing data supplied from said print and line feed controller, for discriminating whether or not the figure data is to be printed on a line having a character represented by the analyzed data, and, if so, supplying to said figure image generator a command that the figure image is to be ORed-written on the character image in said line buffer.

4,623,979

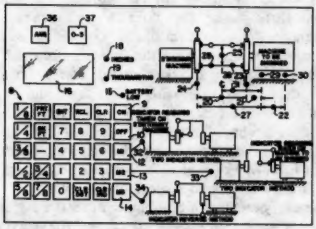
METHOD AND CALCULATOR FOR DETERMINING OFFSET AND ANGULARITY OF COUPLED SHAFTS

John M. Zatezalo, Baldwin, and Lucian J. Spalla, McMurray, both of Pa., assignors to Industrial Maintenance Systems, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 329,707, Dec. 11, 1981, Pat. No. 4,463,438. This application Jan. 31, 1984, Ser. No. 575,343

Int. Cl.⁴ G06F *15/46*

U.S. Cl. 364—715 **8 Claims**



1. A alculator for calculating at least one of offset and angularity of two interconnected drive shafts with respect to one another comprising;

a. a keyboard having at least numerical keys for inputting measurement data,

b. a display connected to the keyboard for displaying numbers typed on the keyboard and numbers calculated therefrom,

c. a face plate to which the keyboard and display are attached having thereon:

(i) at least one illustration of a stationary machine having a shaft connected to a shaft of a machine to be shimmed with gauges mounted on the shafts, and

(ii) indicia near the illustration which identifies

(a) a coupling center line through the connected shafts,

(b) a front foot and a back foot of the machine to be shimmed,

(c) distances between the gauges,

(d) a distance between the front foot and the back foot of the machine to be shimmed,

(e) a distance between the coupling center line and the front foot of the machine to be shimmed, and

(f) at least one distance between the gauges and one foot of the machine to be shimmed,

d. a memory unit storing at least one program and capable of storing the input measurement data,

e. indicator means attached to the face plate near the illustration and indicia to indicate places to be measured in a sequence compatible with a program contained in the memory unit,

f. a processing unit connected to the keyboard, memory and display for receiving data entered on the keyboard, calculating at least one of offset and angularity according to a program contained in the memory and transmitting a result to the display, and

g. a decoding unit connected to the processing unit, display, indicator means and memory for receiving signals from the processing unit and for actuating the indicator means, display and memory.

4,623,980

METHOD OF PROCESSING ELECTRICAL SIGNALS BY MEANS OF FOURIER TRANSFORMATIONS

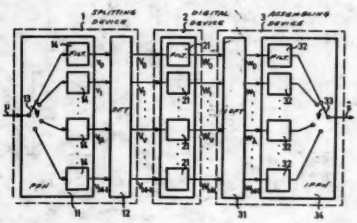
Peter Vary, Herzogenaurach-Niederndorf, Fed. Rep. of Germany, assignor to Te Ka De Felten & Guilleaume Fernmeldeanlagen GmbH, Nuremberg, Fed. Rep. of Germany

Continuation of Ser. No. 374,606, Apr. 30, 1982, abandoned. This application Mar. 8, 1985, Ser. No. 709,358

Claims priority, application Fed. Rep. of Germany, May 9, 1981, 3118473

Int. Cl.⁴ H03H *17/02, 17/06*

U.S. Cl. 364—724 **6 Claims**



1. A method of cancelling echo in speech frequency electrical signals by a digital filtering arrangement, comprising the steps of applying at least one input signal u to a polyphase network to produce intermediate output signals V_ρ, subjecting the intermediate output signals to a discrete Fourier transformation to produce spectral partial signals V_γ having separated real and imaginary components, processing the spectral partial signals V_γ by an adaptive level control to produce at outputs of the digital filtering arrangement complex time signals W_γ which meet the equation

$$W_\gamma(\rho) = c_\gamma(\rho) \cdot V_\gamma(\rho),$$

wherein c_γ is a level factor determined during speech pauses as a function of momentary signal expectation values E1 and E2 and of the spectral partial signals V_γ according to the equation

$$c_\gamma = \sqrt{1 - a_o \cdot \frac{E_1\{|N_\gamma|^2\}}{E_2\{|V_\gamma|^2\}}} \; ;$$

or

-continued

$$c_v = 1 - \sqrt{\alpha_0 \cdot \frac{E_1\{|N_v|^2\}}{E_2\{|V_v|^2\}}};$$

where N_v are interference components, and interpolating the processed signals W_v in an output signal S, the interpolation step including inverse, discrete Fourier transformation and inverse polyphase filtering in a polyphase network.

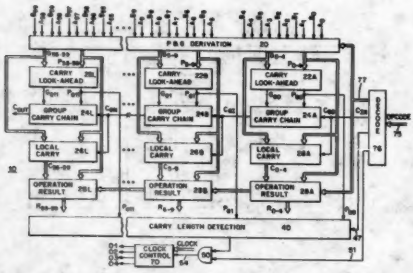
6. A method as defined in claim 1 wherein the spectral partial signals V_v are processed by any combination of an adaptive level control and/or filtering and/or echo cancellation to produce the processed signals W_v suitable for filtering, signal improvement, echo cancellation and/or signal masking of said at least one input signal.

4,623,981

ALU WITH CARRY LENGTH DETECTION

Gilbert Wolrich, Framingham; Edward J. McLellan, Acton; Robert Yodlowski, Hudson, and Daniel Dobberpuhl, Shrewsbury, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Sep. 20, 1983, Ser. No. 534,018
Int. Cl.[4] G05F 7/50
U.S. Cl. 364—736 4 Claims



1. A timing signal control circuit for controlling a timing signal generator that generates iterative periodic timing signals used to control an operating unit that includes means for performing operations in response to said timing signals, said operating unit including an arithmetic and logic unit that processes data signals in parallel and, in performing selected processing operations, generates carry propagate signals in parallel, each said carry propagate signal having an asserted condition and a negated condition, said timing signal control circuit comprising:

A. control signal generating means for receiving said carry propagate signal and for generating a control signal in response to a selected number of sequential ones of said parallel carry propagate signals having the asserted condition; and

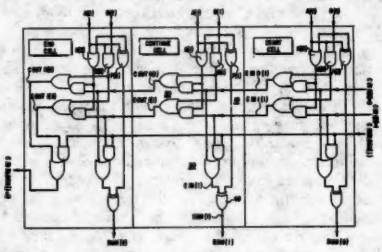
B. disabling means connected to said control signal generating means and for connection to said timing signal generator for disabling said timing signal generator for a selected period of time in response to said control signal, thereby to elongate the period between timing signals when said selected number of sequential ones of said parallel carry propagate signals have the asserted condition.

4,623,982

CONDITIONAL CARRY TECHNIQUES FOR DIGITAL PROCESSORS

Frederick A. Ware, Los Altos Hills, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 410,807, Aug. 23, 1982, abandoned.
This application Jun. 10, 1985, Ser. No. 742,642
Int. Cl.[4] G06F 7/50
U.S. Cl. 364—788 6 Claims



1. A circuit for the addition of two N-digit operands, said circuit comprising a pluraity of blocks comprising:

a plurality of start/continue cell means for starting and continuing each block, each start/continue cell means having

first input means for accepting a first pair of digits, each from one of each of said two N-digit operands to provide a plurality of first logic output signals,

first carry means for combining at least a portion of the first logic output signals from the first input means and a first pair of carry-in signals to provide a first pair of carry-out signals,

first block carry means for coupling a first block carry signal through the start/continue cell means, and

first summation output means for combining at least one logic output signal from the first input means, the first block carry signal and the first pair of carry-in signals to provide a first output summation digit; and

a plurality of end cell means for ending each block, each end cell means having

second input means for accepting a second pair of digits, each from one of said two N-digit operands to provide a plurality of second logic output signals,

second carry means for combining at least a portion of the second logic output signals from the second input means and a second pair of carry-in signals from a preceding cell means to provide a second pair of carry-out signals,

second block carry means for combining the second pair of carry out signals with a second block carry signal to provide a final block carry signal, and

second summation output means for combining at least one logic output signal from the second input means, the second block carry signal and the second pair of carry-in signals to provide a second output summation digit;

said circuit characterized in that the plurality of blocks are coupled in series only by one of the final block carry signals; further characterized in that each block has a variable number of series connected start/continue cell means, which variable number of start/continue cell means are coupled in series to each other by pairs of the first pair of carry-out signals and one of the first block carry signals, and the final start/continue cell means in each block being coupled in series by one of the pair of the first pair of carry-out signals and one of the first block carry signals to one of the end cell means; and further characterized in that the variable number of start/con-

tinue cell means in succeeding blocks increases as an arithmetic progression.

4,623,983

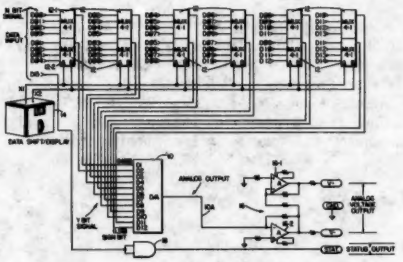
DIGITAL SIGNAL ANALYZER WITH ANALOG DISPLAY

Gary M. Meguerdichian, Waterbury, Conn., assignor to Otis Elevator Company, Farmington, Conn.

Filed Feb. 22, 1983, Ser. No. 468,437

Int. Cl.[4] G11C *19/00;* H04Q *3/06;* G06F *15/20*

U.S. Cl. 364—900 4 Claims



4. A method for testing a system having N-bit information, comprising the steps:

(a) connecting a decoder to the system for receiving the N-bit information, the decoder comprising means for extracting one or more of the bits in the N-bit information in response to a code identifying the bits by their order of significance;

(b) manually entering a code on the decoder identifying a Y number of bits to cause the decoder to provide a Y-bit signal by selecting Y bits in said N-bit signal according to their order of significance, Y being less than N; and

(c) converting said Y-bit signal to an analog signal.

4,623,984

LOGIC ANALYZER HAVING SEARCH AND COMPARISON CAPABILITIES

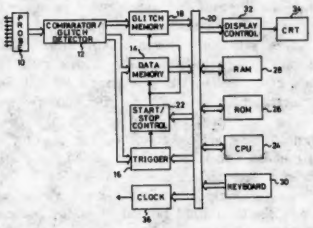
Hidemi Yokokawa, Tokyo; Rikichi Murooka, Chiba; Miyuki Fukuzawa, and Machiko Tomioka, both of Kanagawa, all of Japan, assignors to Sony/Tektronix Corporation, Tokyo, Japan

Continuation of Ser. No. 451,125, Dec. 20, 1982, abandoned. This application Aug. 7, 1985, Ser. No. 763,325

Claims priority, application Japan, Dec. 28, 1981, 56-214115; Jan. 13, 1982, 57-4236

Int. Cl.[4] G06F *3/153*

U.S. Cl. 364—900 7 Claims



1. A logic analyzer storing and displaying a sequence of input logic signal states occurring in a collection of digital signals comprising:

an addressable memory for storing logic signal states, said collection of digital signals being input to said memory;

means for addressing and write enabling said addressable memory such that a first set of successive logic signal states of said collection of digital signals is stored at successive addresses in said addressable memory;

means responsive to operator input for permitting an operator to define a reference signal state, for permitting the operator to select a second set of successive addresses of said addressable memory wherein said second set of memory addresses contains less than all of the logic signal states of said first set of logic signal states, and for permitting the operator to select one of said logic signal states stored at one of the memory addresses of the second set;

means for generating a first count of logic signal states of said first set which were stored in said addressable memory before said selected one logic signal state was stored and which match said reference logic signal state; and

means for displaying a representation of the logic signal states stored at said second set of memory addresses, for displaying said first count, and for displaying an indication of which addresses of said addressable memory are included in said second set and which addresses are not included in said second set.

4,623,985

LANGUAGE TRANSLATOR WITH CIRCUITRY FOR DETECTING AND HOLDING WORDS NOT STORED IN DICTIONARY ROM

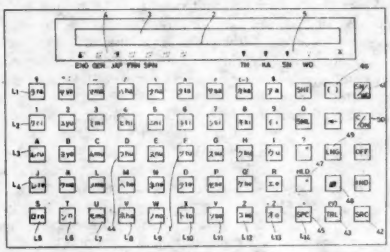
Masafumi Morimoto, Yamatokoriyama; Kunio Yoshida, and Tosaku Nakanishi, both of Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 13, 1981, Ser. No. 253,663

Claims priority, application Japan, Apr. 15, 1980, 55-51064; Apr. 15, 1980, 55-51065

Int. Cl.[4] G06F *15/38*

U.S. Cl. 364—900 6 Claims



1. An electronic translator wherein a first word or words represented in a first language are entered to obtain a second word or words represented in a second language equivalent to the first word or words, comprising:

input means for entering the first word or words;

first electronic read only memory means for storing a plurality of the first words;

second electronic read only memory means for storing a plurality of the second words;

access means responsive to said input means for addressing the first memory means for retrieving the input first word or words and for addressing the second memory means for retrieving the second word or words equivalent to the input first word or words;

detection means responsive to said access means for detecting that no second word or words in said second memory means corresponds to a particular input first word or words; and

holding means responsive to the detection means for holding said particular first word or words without translation or

alteration even after addressing said first memory means by said access means.

4,623,986

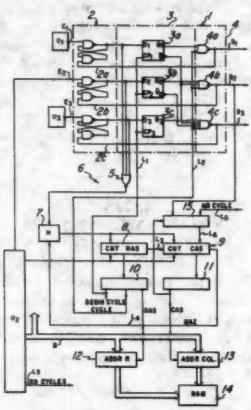
MEMORY ACCESS CONTROLLER HAVING CYCLE NUMBER REGISTER FOR STORING THE NUMBER OF COLUMN ADDRESS CYCLES IN A MULTIPLE COLUMN ADDRESS/SINGLE ROW ADDRESS MEMORY ACCESS CYCLE

Gerard Chauvel, Cagnes, France, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 23, 1984, Ser. No. 583,071

Int. Cl.[4] G06F *13/18*; G11C *7/00, 8/00*

U.S. Cl. 364—900 **8 Claims**



1. A memory access controller for controlling access of a plurality of memory users to a random access memory whose access is by a row address during a row address strobe signal and a column address during a column address strobe signal, at least one of said memory users being a multicycle memory user permitted a plurality of column address strobe signals and a plurality of column addresses corresponding to a single row address strobe signal and a single row address, said memory access controller comprising:

a priority controller connected to each memory user for receiving memory access request signals from said memory users, for generating a memory access signal upon receipt of a memory access request signal from any memory user and for generating a memory access granted signal to a single memory user thereby granting memory access to said single memory user dependent upon a priority of access assigned to said memory users; and

a time signal generator circuit connected to said priority controller having

a memory cycle signal generator for generating a memory cycle signal beginning upon receipt of said memory access signal from said priority conroller and ending upon completion of the memory access cycle,

a row address strobe signal generator for generating said row address strobe signal beginning no earlier than receipt of said memory access request signal from said priority controller and ending upon completion of the memory access cycle,

a column address strobe signal generator for generating said column address strobe signal beginning a predetermined period of time greater than the row address precharge time of aid random access memory after the beginning of said row address strobe signal and lasting a predetermined period of time, and

a cycle number memory connected to said multicycle memory user and said column address strobe signal generator for storing therein a cycle number generated by the multicycle user which indicates the number of such plural column address strobe cycles, for decrementing said number at the end of each column address strobe signal and activating said column address strobe signal generator to generate another column address strobe signal when said number stored in said cycle number memory is nonzero, whereby the end of said column address strobe signal when said number stored in said cycle number memory is zero is the completion of said memory access cycle.

4,623,987

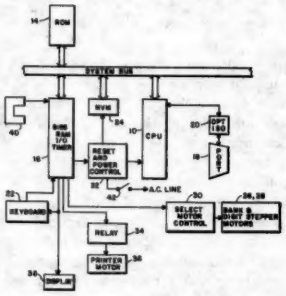
POSTAGE METER WITH KEYBOARD KEYS FOR COMMANDING AND REQUESTING PERFORMANCE OF METER OPERATIONS

John H. Soderberg, Stratford; Howell A. Jones, Southport; Alton B. Eckert, Norwalk; Edward C. Duwel, Trumbull, all of Conn., and Easwaran C. N. Nambudiri, Hicksville, N.Y., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 8, 1982, Ser. No. 447,901

Int. Cl.[4] G06F *15/20*

U.S. Cl. 364—900 **100 Claims**



1. A postage meter constructed and arranged to be connected to a source of supply of power for energization thereof and including printing means, said postage meter comprising:

(a) means for entering data, said data entering means including a keyboard, said keyboard including a plurality of numeric keys and a postage setting key, said keyboard including at lest two special purpose keys and a plurality of display keys;

(b) means for displaying numerical values and other data;

(c) means connected to the printing means for selecting one of a plurality of dates;

(d) the printing means including means for printing postage values and the selected date;

(e) computer means electrically connected to each of the aforesaid entering and displaying and printing means and programmed for processing data for controlling the operation thereof, said computer means programmed for storing data and for performing calculations utilizing stored data, said computer means programmed for causing said displaying means to display respective numerical values in response to the depression of selected numeric keys, and said computer means programmed for causing said displaying means to display said other data in response to the depression of selected keys; and

(f) said stored data including a first amount corresponding to all the postage then available for printing, said computer means causing said displaying means to display a first numerical value in response to the depression of a first selected plurality of the numeric keys, said first numerical value corresponding to a second amount by which it is desired to modify said first amount, said computer means

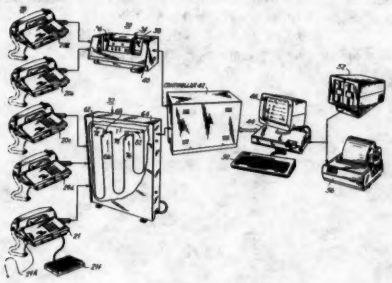
causing said displaying means to display a second numerical value in response to the depression of a second selected plurality of the numeric keys, said second numerical value corresponding to a predetermined combination, said computer means programmed for entering said second amount in response to the depression of one of said special purpose keys and for entering said combination in response to the depression of another of said special purpose keys, and said computer means programmed for automatically processing said second amount and said combination in response to entry of the later one of said second amount and said combination for modifying said first amount by said second amount, whereby said first amount is changed to a new first amount.

4,623,988

APPARATUS FOR MONITORING AND DISPLAYING ACTIVITY OF AN INFORMATION PROCESSING SYSTEM

Robert T. Paulson, Trumbull, Conn.; Gary S. Sevitsky, Bayside, N.Y., and Nicholas A. D'Agosto, III, Trumbull, Conn., assignors to Dictaphone Corporation, Rye, N.Y.

Filed May 20, 1983, Ser. No. 496,654
Int. Cl.[4] H04M *11/10*
U.S. Cl. 364—900 **41 Claims**



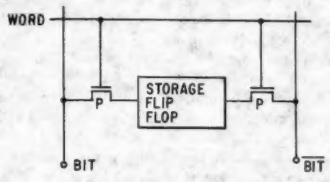
1. In an information processing system having plural recorders for recording information jobs, plural originating stations for supplying information jobs to be recorded, means for selectively connecting originating stations to recorders, recovery stations for recovering information jobs from at least some of said recorders, means for connecting said recovery stations to said some recorders, and monitoring means for monitoring information recording and recovery activity of respective recorders, apparatus comprising: delay means for determining the difference between lengths of information jobs recorded on a recorder and lengths of information jobs recovered from that recorder, and for calculating therefrom the expected recovery delay in recovering an information job to be recorded on said recorder and for producing signals indicating the recovery delay; job counting means for producing count signals representing the difference between the number of information jobs that have been recorded on a recorder and the number of information jobs that have been recovered from that recorder to indicate the number of information jobs that are recorded on and are awaiting recovery from said recorder; signal control means coupled to each of said recorders for receiving the produced signals and for providing signals representing the number of recorded information jobs awaiting recovery from, and the recovery delay of respective recorders; and display means coupled to said signal control means and responsive to at least some of the provided signals for displaying alphanumeric characters representing recovery delay in the number of information jobs awaiting recovery from respective recorders.

4,623,989

MEMORY WITH P-CHANNEL CELL ACCESS TRANSISTORS

Terence G. Blake, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 31, 1983, Ser. No. 528,204
Int. Cl.[4] G11C *11/40, 8/00*
U.S. Cl. 365—156 **7 Claims**



1. A static random access memory comprising:

(a) An array of memory cells arranged in rows and columns, each memory cell comprising two p-channel field effect access transistors, two p-channel field effect driver transistors and two n-channel load transistors;

(b) address decoder means for selecting a particular one of said cells in said array for reading information therefrom or writing infromation therein:

(c) sense amplifier means for amplifying the information read from a particular one of said cells selected by said address decoder means;

(d) said access transistors having a width-to-length ratio which is greater than the width-to-length ratio of said driver transistors in each said memory cell; and

(e) a plurality of wordlines each connected to said address decoder means and to one row of said cells, whereby a selected one of said wordlines is pulled down to access one row of said cells;

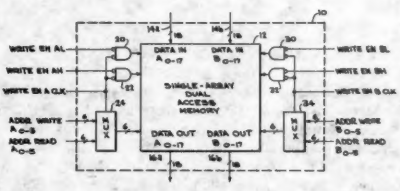
(f) at least one of said address decoder means comprising a NOR gate having a plurality of transistors, each transistor having a gate connected to one of said address bits, and wherein at least one of said address bits connected to each said NOR gate is connected to control both n-channel and p-channel transistors and at least one other of said address bits is connected to control only an n-channel transistor and not a p-channel transistor.

4,623,990

DUAL-PORT READ/WRITE RAM WITH SINGLE ARRAY

Michael Allen, San Francisco, and Lee Hirsch, Mountain View, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Oct. 31, 1984, Ser. No. 667,022
Int. Cl.[4] G11C *7/00*
U.S. Cl. 365—189 **10 Claims**



1. In a dual-access read/write digital storage device having at least two input port means for receiving plural-bit data words, at least two output port means for generating plural-bit data words, dual-access read/write random access memory (RAM) means having a plurality of addressable registers each

storing one of said plural-bit data words said RAM means responsive to a first and a second storage register address signal and to a first and a second bi-state read/write signal for coupling said RAM storage register having said first address to a first predetermined one of said input port means or to a first predetermined one of said output port means depending on the state of said first read/write signal and for coupling said RAM storage register having said second address to a second predetermined one of said input port means or to a second predetermined one of said output port means depending on the state of said second read/write signal,

whereby, the plural-bit contents of said RAM register selected by said first, said second address signals, respectively, can be communicated to a predetermined one, a predetermined second, respectively, of said at least two output port means and/or replaced by said plural-bit data word at a predetermined one, a predetermined second, respectively, of said at least two input port means.

4,623,991

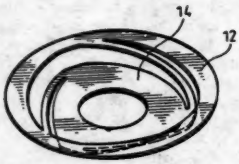
DELTA-SHAPED GEOPHONE SPRING

Frederick A. Vitringa, Quathiaski Cove, Canada, assignor to Geosource, Inc., Houston, Tex.

Filed Nov. 30, 1984, Ser. No. 676,729

Int. Cl.[4] H04R *9/00, 11/00;* **F16F** *1/34*

U.S. Cl. 367—133 **6 Claims**



1. A geophone spring which comprises:

(a) an outer ring;

(b) an inner ring; and

(c) a plurality of legs connecting the outer and inner rings, the legs being curved about the center of the spring and extending from a juncture point on the outer ring to a juncture point on the inner ring, and when the spring is flat an inner edge of each leg lying substantially on an arc having a radius at least 1.25 times greater than the distance from the center of the spring to the inner edge of the leg at the juncture point where the leg joins the inner ring.

4,623,992

OPERATING PANEL FOR ELECTRONIC AUDIO EQUIPMENT

Masanori Kurosaki; Yoshio Aoyagi; Yoshiharu Ueki; Yukihiro Kaneko; Minoru Motohashi; Shozaburo Sakaguchi, and Manabu Sawaki, all of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

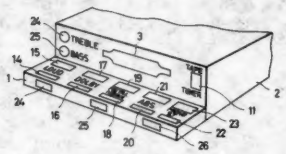
Filed Dec. 6, 1983, Ser. No. 558,742

Claims priority, application Japan, Dec. 6, 1982, 57-184513[U]; Jan. 26, 1983, 58-9943

Int. Cl.[4] H04B *1/20, 1/08*

U.S. Cl. 369—6 **8 Claims**

1. In an operating panel for at least one electronic component, said electronic component having a hinged cover panel member covering one surface of said electronic component and having operating means operable by a user to control operation of said electronic component, the improvement



wherein said operating means is provided on at least two surfaces of said cover panel member.

4,623,993

REDUCING LISTENERS DISCOMFORT RESULTING FROM TRACK LOSS IN COMPACT DISC PLAYERS

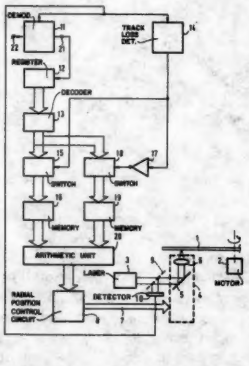
Theodoor A. J. Schlösser, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 6, 1984, Ser. No. 577,429

Claims priority, application Netherlands, Oct. 17, 1983, 8303565

Int. Cl.[4] G11B *7/00*

U.S. Cl. 369—33 **8 Claims**



1. In apparatus having means for directing a beam onto disc-shaped record carrier means having tracks, for reading information stored on said tracks, said information comprising time code data indicative of the radial position of said beam on said record carrier means, said apparatus further having radial position control circuit means for controlling said radial position of said beam in accordance with go-to position signals applied to said control circuit means, the improvement comprising:

means for detecting loss of track of said beam and generating last time code data indicative of said radial position of said beam at said loss of track;

storage means for storing said last time code data;

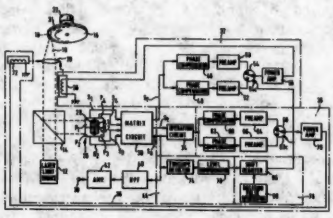
and means connected to said storage means and said radial position control circuit means for generating go-to position signals determined only in part by said last time code data and applying said go-to position signals to said radial position control circuit means.

4,623,994

SCANNING SERVO SYSTEM FOR OPTICAL-DISC INFORMATION REPRODUCING APPARATUS

Daiki Nabeshima, Kamakura, and Hiroshi Nakane, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Apr. 29, 1983, Ser. No. 489,770
Claims priority, application Japan, Apr. 30, 1982, 57-72741
Int. Cl.[4] G11B *7/00, 21/10*
U.S. Cl. 369—44 15 Claims



1. A scanning servo system for an optical-disc information reproducing apparatus in which information stored in an optical-disc as a series of recesses or pits arranged in concentric tracks or in a single spiral track is read out during rotation of the optical disc by a scanning spot of a light beam, said system comprising:

a light source for generating the light beam used for reading out the information as an otpical signal;

means for applying the scanning spot of the light beam to a selected track location;

a transducer for converting the optical signal into an electric signal;

means for controlling said scanning spot applying means in response to the electric signal, thereby causing the scanning spot to scan the selected track location accurately, the response characteristics of said controlling means being variable in response to the electric signal;

means for detecting a dropout of the information on the selected track location and generating a responsive signal to said dropout of information;

means for delaying said responsive signal to said dropout of information for one rotation period of the optical-disc to anticipate a subsequent occurrence of said dropout of information;

means for lowering the response characteristics of said controlling means in response to the delayed responsive signal to said dropout of information.

4,623,995

RECORDING DISC REPRODUCING DEVICE

Ichiro Kawamura; Yoshitaka Fojioka, and Makoto Fujita, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

PCT No. PCT/JP84/00449, § 371 Date May 9, 1985, § 102(e) Date May 9, 1985, PCT Pub. No. WO85/01383, PCT Pub. Date Mar. 28, 1985
PCT Filed Sep. 17, 1984, Ser. No. 740,273
Claims priority, application Japan, Sep. 16, 1983, 58-171841
Int. Cl.[4] G11B *1/00*
U.S. Cl. 369—77.2 5 Claims

1. A recording disc reproducing device for use with a disc case having a flat rectangular box shaped case body with an opening at one end thereof, the interior of the case body being sized for holding a disc like recording medium and the case body having an engaging hole located near the opening of the case body, the disc case further including a cover removably received in the opening of the case body, the recording disc reproducing device comprising:

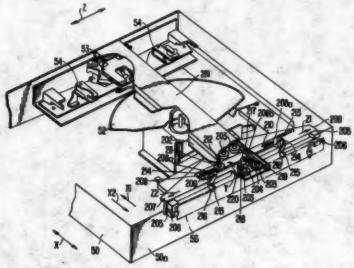
a housing having a front side with an elongated inserting slot therein through which the disc case is inserted;

holding means, disposed at a rear part of the reproducing device, for holding the recording disc within the reproducing device after a disc case has been inserted into and withdrawn from the reproducing device;

turntable means, positioned between said inserting slot and a rear part of the reproducing device, for rotating the recording disc;

a rail disposed in said housing extending in a longitudinal direction along which a record disc is inserted into and removed from the recording device;

a base slidably supported on said rail from a first position near said inserting slot to a second position along said longitudinal direction towards the rear part of the reproducing device;



an opening means disposed on said base for expanding the opening of a disc case which is inserted through said disc case inserting slot;

an engaging means disposed on said base for removably engaging with the engaging hole of a disc case which is inserted through said inserting slot to thereby secure the disc case with respect to said base;

a slide controlling means disposed between said base and said rail for either preventing or allowing said base to slide along said rail; and

a coupling means, operatively connected to said engaging means and said slide controlling means, for causing said slide controlling means to prevent said base from sliding along said rail except when said engaging means is engaged with the engaging hole of a disc case which has been inserted through said disc case inserting slot.

4,623,996

PACKET SWITCHED MULTIPLE QUEUE NXM SWITCH NODE AND PROCESSING METHOD

Robert J. McMillen, 2508 E. Willow #104, Long Beach, Calif. 90806

Filed Oct. 18, 1984, Ser. No. 662,474
Int. Cl.[4] H04Q *11/04;* H01H *67/00*
U.S. Cl. 370—60 6 Claims

1. A packet switching node for processing applied data packets containing signals indicative of the output port destination to which said data packets are to be applied, said packet switching node comprising:

a plurality of input ports;

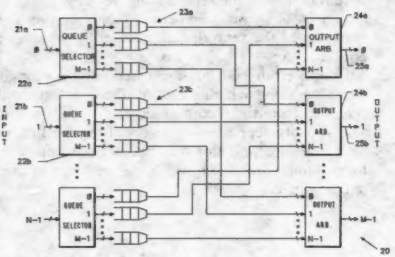
a plurality of output ports;

a plurality of queue selection means individually coupled to corresponding ones of said plurality of input ports for routing data packets applied to each of said input ports in accordance with the output port destination of said data packets;

a plurality of queue sets individually coupled to corresponding ones of said plurality of queue selection means, each of said queue sets comprising a plurality of queues for storing

and forwarding data packets applied thereto as a function of output port destination; and

a plurality of output arbitration means individually coupled between corresponding ones of said plurality of output ports and the respective queue of each of said queue sets



which store and forward data packets whose destinations are said corresponding output port, for transfering the data packets stored in said queues to said corresponding output port in accordance with a predetermined priority arbitration scheme.

4,623,997

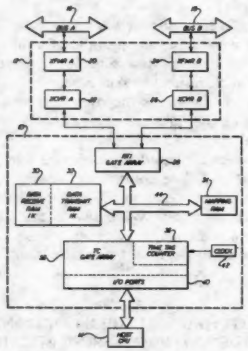
COHERENT INTERFACE WITH WRAPAROUND RECEIVE AND TRANSMIT MEMORIES

Bhalchandra R. Tulpule, Vernon, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 13, 1984, Ser. No. 681,166

Int. Cl.[4] H04J *3/00*

U.S. Cl. 370—85 **2 Claims**



1. A bus interface circuit for coherently transferring digital signals as words of a specified number of bits formatted in messages with each message having a specified maximum number of words between a signal processor and an asynchronous serial data bus, comprising:

remote terminal interface (RTI) means, responsive to incoming digital signals in serial form from the serial data bus for transferring said incoming serial signals in parallel form, and responsive to outgoing digital signals in parallel form from the signal processor for transferring said outgoing parallel signals in serial form to the serial data bus;

wraparound receive memory means, responsive to said incoming serial signals in parallel form from said RTI for sequentially storing received messages at successive memory addresses starting at the beginning of said wraparound memory and then continuing regardless of message number until the end of said wraparound memory is reached and then continuing sequential storing at the beginning again of said wraparound memory, said wraparound memory providing read access to stored words to the signal processor;

transmit memory means, having its memory addresses organized in predefined message blocks with each block having a selected number of word storage addresses greater than the specified maximum number in a message each block for storing more than one message, each block organized for utilization as a separate wraparound transmit memory responsive to said outgoing parallel signals from the signal processor for sequentially storing message words at successive memory addresses starting at the beginning of a wraparound transmit memory block and then continuing until the end of said block is reached and then continuing sequential storing at the beginning again of said block, read access to each of said blocks to said RTI being confined to a signal processor specified completed message in the block; and

terminal controller (TC) means, responsive to said incoming serial signals in parallel form from said RTI for providing start and stop addresses of complete and valid messages to the signal processor for algorithmically preventing signal processor read access to an individual message stored in wraparound receive memory until said individual message has been entirely and correctly received, said TC responsive to said outgoing signals in parallel form for providing to said RTI read access to said transmit memory but only to the signal process specified message in a block and for algorithmically preventing signal processor write access to the latest message in an individual block in said transmit memory if said RTI is read accessing said latest message and for otherwise being responsive to the storing of a word of a new message by said signal processor for transmission in said individual block and preventing RTI read access to said new message until said first word for transmission is stored by said signal processor in said individual block.

4,623,998

COMMUNICATION NETWORK HAVING GAIN ADJUSTMENT FUNCTION OF A TRANSMISSION AMPLIFIER OF MEDIUM ATTACHMENT UNIT

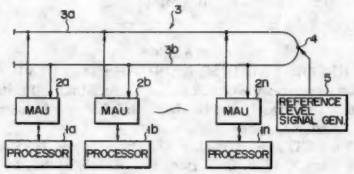
Hiroshi Kobayashi, Tokyo; Hideaki Haruyama, Yokohama, and Tsuguhiro Hirose, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 28, 1985, Ser. No. 738,252

Claims priority, application Japan, Jun. 1, 1984, 59-112514

Int. Cl.[4] H04J *3/08*

U.S. Cl. 370—85 **7 Claims**



1. A communication network comprising:

a plurality of information processors;

a communication medium;

medium attachment units (MAU) for coupling said information processors to said communication medium;

pilot signal transmitting means for sending a pilot signal, having a reference level, at a predetermined point of said communication medium so that said pilot signal may be received by each MAU;

each MAU comprising a reception amplifier to receive a

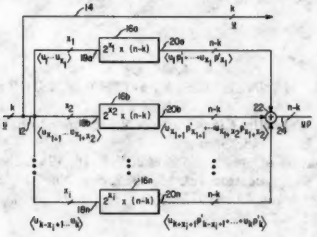
signal from said communication medium; a transmission amplifier to transmit a signal to said communication medium; reception level detecting means coupled to said reception amplifier for detecting a reception level of the signal received by said reception amplifier; test signal transmitting means for transmitting a test signal to said communication medium through said transmission amplifier; gain control means for controlling gains of said transmission and reception amplifiers in response to said reception level detecting means when said pilot signal and test signal are received by said reception amplifier, said gain control means being arranged to enable said test signal transmitting means to transmit said test signal to said communication medium through said transmission amplifier; and random number data generating means; and

said gain control means being arranged to allow said test signal transmitting amplifier to said signal through said transmission amplifier to said communication medium in a time slot depending on random number data generated by said random number generating means after reception of the pilot signal and to adjust the gain of said transmission amplifier in accordance with the reception level of the test signal received by said reception amplifier in response to said reception level detecting means.

4,623,999
LOOK-UP TABLE ENCODER FOR LINEAR BLOCK CODES

Patricia L. Patterson, St. Petersburg, Fla., assignor to E-Systems, Inc., Dallas, Tex.

Filed Jun. 4, 1984, Ser. No. 617,167
Int. Cl.[4] G06F *11/08*
U.S. Cl. 371—37 **14 Claims**



1. A look-up table encoder for encoding a k bit information word with a linear error correcting block code to generate an n−k bit parity word, where n and k are positive integers, comprising:

a plurality of storage means respectively having 2^{x1}, 2^{x2}, . . . , and 2^{xi} address locations, where i=1,2,3 . . . and $x_1+x_2+\ldots+x_1=k$, each of said address locations storing an output word having n−k bits;

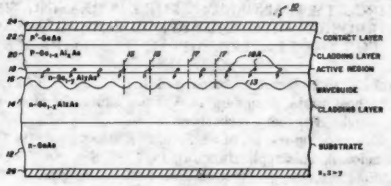
means for applying a portion of the k bit information word to each of said storage means, said portion serving to address a respective location therein to map the portion into an output word stored at the respective location; and

means for summing the output words from said plurality of storage means on a bit position-by-bit position basis to generate the parity word associated with said information word.

4,624,000
PHASED ARRAY SEMICONDUCTOR LASERS WITH PREFERRED EMISSION IN A SINGLE LOBE

William Streifer, Palo Alto; Donald R. Scifres, Los Altos; Robert D. Burnham, Palo Alto, and Thomas L. Paoli, Los Altos, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 1, 1984, Ser. No. 667,251
Int. Cl.[4] H01S *3/19*
U.S. Cl. 372—45 **26 Claims**

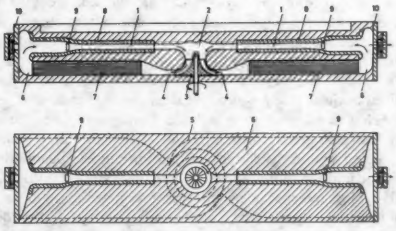


1. A phased array semiconductor laser comprising a plurality of spatially disposed multiple lasing elements formed relative to an active region providing optical cavities for light wave generation and propagation under lasing conditions and wherein the optical field of said lasing elements are coupled into the optical cavities of adjacent lasing elements to provide a phased locked condition across the array, structural means associated with said laser to cause regions between said optical cavities to produce higher gain in said between regions compared to the gain experienced in said optical cavities by spatially modulating the optical overlap of the optical field of each of said lasing elements laterally across the array so as to favor the fundamental supermode over the other potential supermodes of said laser.

4,624,001
LASER APPARATUS

Karl Gürs, Eschborn, Fed. Rep. of Germany, assignor to Battelle-Institut e.V., Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 12, 1983, Ser. No. 560,377
Claims priority, application Fed. Rep. of Germany, Dec. 11, 1982, 3245959
Int. Cl.[4] H01S *3/09*
U.S. Cl. 372—90 **10 Claims**



1. Laser apparatus in accordance with gas transport principle with gas circulation, cooling and excitation system and fast longitudinal gas flow, comprised of at least one radial compressor with a diffuser and at least two longitudinal tubes which together form the laser resonator, the axis of one of the radial compressors being arranged perpendicularly to the axis of said two longitudinal pipes, which form together a straight line resonator, the tubes on one side directly open into the inlet of the radial compressor and on the other side are connected via gas deflecting elements with at least one flow channel into which cooling elements are integrated, the flow channels being

connected via the diffuser with the outlet of the radial compressor, so that at least one integrated closed loop for the laser gas is formed, the diffuser on both sides of the compressor extending directly to two broad flow channels extending parallel to the longitudinal tubes.

4,624,002

CIRCUIT ARRANGEMENT FOR DECREASING THE CORROSION OF THE ELECTRODES IN A FURNACE FOR THE ELECTRIC MELTING OF VITREOUS MATERIAL

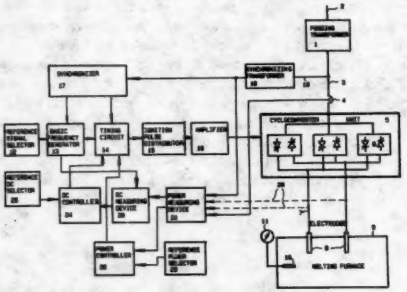
Pavel Zahalka; Jaroslav Stanek, and Jiri Matej, all of Prague, Czechoslovakia, assignors to Vysoka skola chemicko-technologicka, Prague, Czechoslovakia

Continuation-in-part of Ser. No. 597,443, Apr. 6, 1984, abandoned. This application Jul. 18, 1985, Ser. No. 756,361

Claims priority, application Czechoslovakia, Apr. 6, 1983, 2406-83

Int. Cl.[4] C03B *5/027*

U.S. Cl. 373—40 **3 Claims**



1. A circuit arrangement for supplying an electric furnace for the melting of vitreous materials by the passage of alternating current with a low frequency, optimal in regard to minimal corrosion of feeding electrodes, lower than 60 or 50 Hz, comprising an alternating three-phase feeding source, a feeding line leading from said source to a current sensor and to a cycloconverter comprising thyristors enabling the change of three-phase input into a single-phase output alternating current with a simultaneous changing the input mains frequency into a said optimal output frequency, the cycloconverter being connected with said feeding electrodes, a reference signal selector of desired optimal low frequency value, the output of said selector being connected with a basic frequency generator, the output of said generator being connected with a timing circuit connected with a distributor of ignition pulses, means to amplify the ignition pulses and distribute them among thyristors in said cycloconverter, a synchronizer connected to both the basic frequency generator and the timing circuit, said synchronizer being also connected to a synchronizing transformer, the input of said synchronizing transformer being connected with the feeding line, a power measuring device provided with a voltage input connected to said synchronizing transformer, and a current input connected to said current sensor and third low frequency voltage input of said power measuring device connected to electrodes fed by low frequency current, a measuring device of the DC component the one input of which being connected with the output of said power measuring device the second input of which being connected with said basic frequency generator, a temperature sensor measuring the temperature in said furnace, and the output of said temperature sensor being connected to a temperature indicator.

4,624,003

APPARATUS FOR HEATING ELECTRICALLY CONDUCTIVE BULK MATERIALS

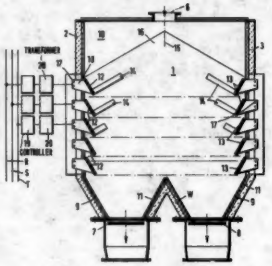
Paul Eirich, Bahnhofstrasse 11; Walter Eirich, Spessartweg 18; Hubert Eirich, Sandweg 16, all of 6969 Hardheim, and Erwin Goldschmidt, Hardheim, all of Fed. Rep. of Germany, assignors to Paul Eirich; Walter Eirich and Hubert Eirich, all of Hardheim, Fed. Rep. of Germany

Filed Apr. 5, 1983, Ser. No. 482,217

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1982, 3214472

Int. Cl.[4] F27D *11/04;* **F27B** *11/09;* **H05B** *3/60*

U.S. Cl. 373—120 **19 Claims**



1. Apparatus for heating electrically conductive bulk materials by means of resistance heating, comprising an inlet, an outlet, and, arranged between them, end and side walls forming an oven chamber, and comprising at least two pairs of generally planar electrode plates mounted to opposed end walls and electrically disconnected from one another, the planes of a plurality of said electrode plates mounted to each wall being substantially parallel and vertically displaced from one another; isolating means, coupled to each pair of electrode plates, for isolating the electrical supply of each pair of electrode plates from each other pair; and means for adjusting the amount of electrical energy supplied to each pair of electrode plates.

4,624,004

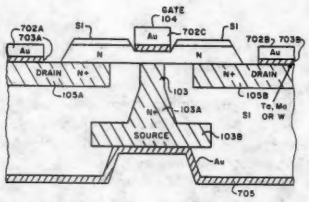
BURIED CHANNEL MESFET WITH BACKSIDE SOURCE CONTACT

Joseph A. Calviello, Kings Park, N.Y., assignor to Eaton Corporation, Cleveland, Ohio

Continuation of Ser. No. 466,662, Feb. 15, 1983, abandoned. This application Jul. 15, 1985, Ser. No. 755,534

Int. Cl.[4] H01L *29/80, 29/06, 29/20*

U.S. Cl. 357—22 **8 Claims**



1. A field effect transistor of the type having a source, a gate and a drain, comprising:

(a) a semi-insulating substrate in the form of a wafer having upper and lower surfaces and a right, central, and left-hand region,

(b) a first N+ layer, located within the semi-insulating substrate and having a top surface portion extending along and beneath the upper surface of the wafer in the right-hand region, but not extending into the central or left-hand regions, said first N+ layer forming a first drain of the field effect transistor,

(c) a second N+ layer, located within the semi-insulating substrate and having a top surface portion extending along and beneath the upper surface of the wafer in the left-hand region, but not extending into the central or right-hand regions, said second N+ layer forming a second drain of the field effect transistor,

(d) a third N+ layer, located within the semi-insulating substrate and having a top surface portion extending along and beneath the upper surface of the wafer in the central region, said top surface portion not extending into the left or right-hand regions, said third N+ layer forming the source of the field effect transistor,

(e) an N layer located on the upper surface of the semi-insulating wafer and covering at least a portion of the source and drains, and

wherein the third N+ layer further includes a lower portion extending downwardly from said top surface portion through the semi-insulating wafer to the wafer's lower side to provide an area in which contact can be made to the source and wherein said lower portion of said third N+ layer has a lower extent substantially lower than the lowermost extent of the first and second N+ layers,

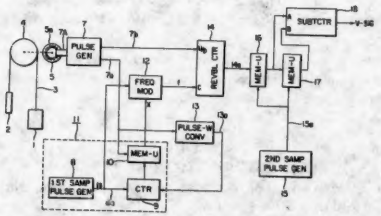
and wherein said top surface portions of said first, second and third N+ layers are coplanar along said upper surface of said semi-insulating wafer.

4,624,005

VELOCITY DETECTION APPARATUS FOR AN ELEVATOR

Kenzo Tachino, Komaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Oct. 24, 1984, Ser. No. 664,415
Claims priority, application Japan, Oct. 28, 1983, 58-202100
Int. Cl.[4] G01D *7/00*
U.S. Cl. 377—20 **14 Claims**



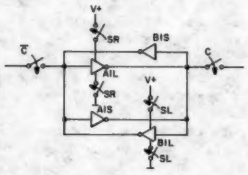
1. A velocity detection apparatus for an elevator comprising first pulse generation means for generating first pulses corresponding to the magnitude of movement of a cage in response to the rotational movement of a sheave of a hoisting machine and having a first pulse frequency and a given first width; second pulse generation means including a frequency modulator for generating modulated pulses having a frequency determined by a sampling pulse frequency fs higher than the first pulse frequency fc and a modulation factor x = fs/fc and having a pulse width inversely proportional to the width of the first pulses; and detection means for counting the modulated pulses for intervals determined by the first pulse frequency to produce count values and for detecting the count values of the modulated pulses representing velocity of said elevator.

4,624,006

BIDIRECTIONAL SHIFT REGISTER USING PARALLEL INVERTERS WITH ADJUSTABLE TRANSCONDUCTANCE

William C. Rempfer, Santa Clara, and Thomas P. Redfern, San Jose, both of Calif., assignors to Linear Technology Corporation, Milpitas, Calif.

Filed May 10, 1985, Ser. No. 732,660
Int. Cl.[4] G11C *19/28*
U.S. Cl. 377—69 **6 Claims**



1. A bidirectional shift register comprising

a plurality of cells,

first gate means for serially connecting said plurality of cells,

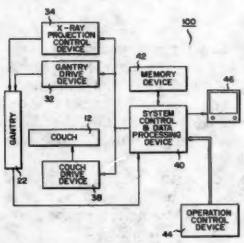
each cell including first and second circuit portions interconnected by a second gate means, each of said circuit portions including first and second inverter means connected in parallel and in opposite directions, and means for varying the transconductance of said first and second inverter means and thereby establishing the direction of data flow through said first and second circuit portions.

4,624,007

METHOD OF OBTAINING X-RAY CT IMAGE AND APPARATUS FOR UTILIZING THE SAME METHOD

Jun Muranushi, Ootawara, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 22, 1984, Ser. No. 582,603
Claims priority, application Japan, Feb. 24, 1983, 58-30601
Int. Cl.[4] H05G *1/64*
U.S. Cl. 378—4 **4 Claims**



1. A method for obtaining enlarged X-ray computerized tomographic images in cross-sectional planes of an object under examination at a plurality of designated positions along a curved line, comprising the steps of:

projecting a fan-shaped radiation beam toward the object;

receiving that portion of said fan-shaped radiation beam that has penetrated through the object so as to produce projection data representative of that penetration;

translating the object along the longitudinal axis of the object to obtain a scannogram of the object from said projection data;

displaying said scannogram;

displaying, superimposed upon said scannogram, a plurality of line markers;

manually aligning said line markers with a plurality of corresponding designated positions of said object along said curved line at which the enlarged tomographic images are to be taken;

displaying, superimposed upon said line markers, a plurality of center marks;

manually aligning said center markers with the centers of said designated positions;

successively positioning said source means relative said object in response to said manual alignment of said line markers, to align said fan-shaped beam along said object at successive ones of said designated positions;

effecting a rotation of said source means about the object at each of said successive designated positions to acquire projection data viewed from different directions at said successive designated positions;

reconstructing, in response to both said projection data obtained from said second control means and to said manual alignment of said center markers, enlarged images of said object the centers of which correspond to the centers of said designated positions as evidenced by the locations of said center markers on said displayed scannogram; and

displaying said enlarged tomographic images.

4,624,008

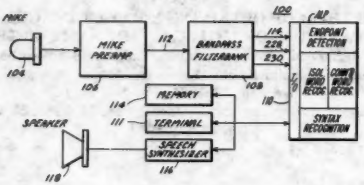
APPARATUS FOR AUTOMATIC SPEECH RECOGNITION

George Vensko, Ramona; Lawrence Carlin; Mark W. Nelson, both of San Diego, all of Calif., and A. Richard Smith, Huntington, Conn., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 9, 1983, Ser. No. 473,422

Int. Cl.[4] G10L 5/00

U.S. Cl. 381—43 **5 Claims**



1. An apparatus for recognizing sentences of speech, said sentences comprised of utterances separated by pauses and including both isolated words and connected words taken from a predefined finite size vocabulary, said apparatus comprising:

means including a bandpass filter bank for forming frames of digital signals representative of said sentences of speech; and

microprocessor means for recognizing said sentences from said frames of digital signals in accordance with a predefined syntax; wherein said means for recognizing said sentences further comprises;

memory means for storing said predefined vocabulary as isolated word templates and partial phrase connected word templates;

means for detecting the endpoints of said utterances and for generating an output representative of such endpoint detection;

isolated word recognizing means responsive to the output of said endpoint detection means for recognizing said isolated words by comparing selected ones of said isolated word templates with said frames of digital signals;

connected word recognizing means responsive to the output of said endpoint detection means for recognizing said connected words by comparing selected ones of said partial phrase connected word templates with said frames of digital signals; and

means for selecting said selected ones of said isolated word and partial phrase connected word templates and combining said recognized isolated words and connected words into said sentences in accordance with said predefined syntax.

4,624,009

SIGNAL PATTERN ENCODER AND CLASSIFIER

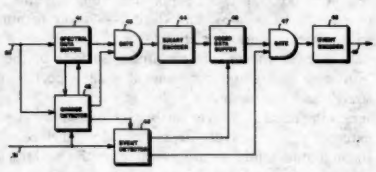
James W. Glenn, Reston, and Joseph C. Brown, Herndon, both of Va., assignors to Figgie International, Inc., Willoughby, Ohio

Continuation of Ser. No. 953,901, Oct. 23, 1978, abandoned.

This application May 2, 1980, Ser. No. 146,155

Int. Cl.[4] G10L 5/00

U.S. Cl. 381—43 **13 Claims**



1. An acoustic signal encoder and classifier, comprising:

a transducer;

signal processing means coupled to the output of said transducer for providing spectrum samples representative of the signal output of said transducer, each of said spectrum samples having multiple elements;

event encoding logic means for computing the sum of the differences between each element in a current spectrum sample and each corresponding element in the last previous spectrum sample accepted by said event encoding logic means and for discarding said current spectrum sample if said sum is below a predetermined threshold value;

means for classifying patterns, said pattern classification means being coupled to the output of said event encoding logic means;

means for timing and controlling, said timing and control means being coupled to said signal processing means, said event encoding logic means and said pattern classification means; and

means for storing a reference pattern said storage means being coupled between said timing and control means and said pattern classification means.

4,624,010

SPEECH RECOGNITION APPARATUS

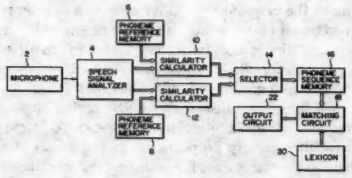
Yoichi Takebayashi, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 24, 1983, Ser. No. 460,303

Claims priority, application Japan, Jan. 29, 1982, 57-12808

Int. Cl.[4] G10L 5/00

U.S. Cl. 381—43 **15 Claims**



1. A speech recognition apparatus comprising:

electrical signal generating means for generating plural frames of electrical speech signals representing an input speech;

parameter extraction means for analyzing the speech signals from said electrical signal generating means and time-sequentially extracting acoustic parameter patterns representing the phonetic features of the speech signal for each frame and each including a plurality of acoustic parameter components, said parameter extraction means including a first output port from which M (M=an integer) acoustic parameter components derived from said plurality of extracted acoustic parameter components are generated and a second output port from whihc N (N=an integer smaller than M) acoustic parameter components derived from said plurality of extracted acoustic parameter components are supplied;

first phoneme pattern vector memory means for storing an acoustic parameter pattern formed of each frame of M acoustic parameter components supplied from said first output port of said parameter extraction means;

second phoneme pattern vector memory means for storing acoustic parameter patterns formed of plural frames of the N acoustic parameter components supplied from said second output port of said parameter extraction means;

first phoneme reference memory means storing a plurality of first reference pattern vectors, each including an acoustic parameter pattern and representing a first group of phonemes;

second phoneme reference memory means storing a plurality of second reference pattern vectors, each including a plurality of acoustic parameter patterns and representing a second group of phonemes;

calculating means for calculating the similarity between the pattern stored in said first phoneme pattern vector memory means and each of the first reference pattern vectors stored in said first phoneme reference memory means to produce phoneme data corresponding to one of the first reference phoneme vectors which has the largest similarity with respect to the pattern stored in said first phoneme pattern vector memory means and for calculating similarity between the patterns stored in said second phoneme pattern vector memory means and each of the second reference pattern vectors stored in said second phoneme reference memory means to produce phoneme data corresponding to one of the second reference phoneme vectors which has the largest similarity with respect to the patterns stored in said second phoneme vector memory means; and

judging means for recognizing the input speech based on the phoneme data supplied from the calculating means.

4,624,011
SPEECH RECOGNITION SYSTEM

Sadakazu Watanabe, Kawasaki; Hidenori Shinoda; Tsuneo Nitta, both of Yokohama; Yoichi Takebayashi, Tokyo; Shouichi Hirai, Yokohama; Tomio Sakata, Tokyo; Kensuke Uehara, Tokyo; Yasuo Takahashi, Tokyo, all of Japan, and Haruo Asada, Cambridge, Mass., assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 28, 1983, Ser. No. 462,042
Claims priority, application Japan, Jan. 29, 1982, 57-12792
Int. Cl.[4] G10L *5/00*
U.S. Cl. 381—43 **8 Claims**

1. A speech recognition system comprising:

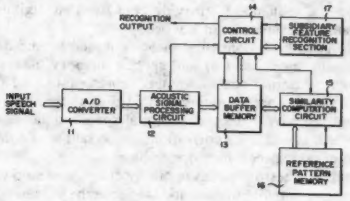
means for converting audible input speech into an input sheech signal;

acoustic signal processing means for extracting first feature data, second feature data and third feature data from the input speech signal, the first feature data being a time-frequency spectrum pattern data comprising a plurality of frame data arranged on a time axis, and each of the frame data being frequency spectrum data obtained at each of predetermined time points on the time axis, the second feature data being phoneme data obtained in respective frames defining respecitve computation intervals, the frequency range of the input speech signal being divided into a plurality of channels and the frequency spectrum data being obtained at each channel, the phoneme data of each frame being labelled with a prescribed character, and the third feature data being a coded acoustic feature data, the frequency spectrum data of each frame being divided into gross spectrum envelopes;

a buffer memory means for storing the first to third feature data;

a reference pattern memory means for storing first, second and third reference data each

a similarity computation circuit for computing similarities between the first to third feature data and the first to third reference data, respectively;



means for determining a word class pattern having a first reference pattern which gives a largest similarity as being the input speech signal when the largest similarity is larger than a prescribed value and when a difference between the largest sililarity and a second largest similarity is larger than a prescribed value;

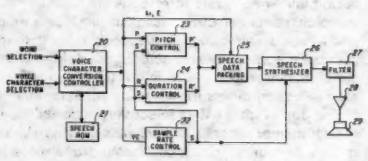
means for extracting m classes of patterns of reference patterns which give the largest to mth largest similarities when the word class pattern is regarded not to correspond to the input speech signal;

means for computing similarities between the second feature data and the second reference data and between the third feature data and the third reference data for determining whether or not one of said m classes of patterns correspond to the input speech signal.

4,624,012
METHOD AND APPARATUS FOR CONVERTING VOICE CHARACTERISTICS OF SYNTHESIZED SPEECH

Kun-Shan Lin; Alva E. Henderson, and Gene A. Frantz, all of Lubbock, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 6, 1982, Ser. No. 375,434
Int. Cl.[4] G10L *5/00*
U.S. Cl. 381—51 **29 Claims**



1. A text-to-speech synthesis system for producing audible synthesized human speech of any one of a plurality of voice sounds simulating child-like, adult, aged and sexual characteristics from digital characters comprising:

text reader means adapted to be exposed to text material and responsive thereto for generating information signals indicative of the substantive content thereof;

converter means for receiving said information signals from

said text reader means and generating digital character signals representative thereof;

means for receiving said digital character signals from said converter means;

memory means storing digital speech data including digital speech instructional rules and digital speech data representative of sound unit code signals;

data processing means for searching said digital speech data stored in said memory means to locate digital speech data representative of a sound unit code corresponding to said digital character signals received from said converter means;

speech memory means storing digital speech data representative of a plurality of sound units;

concatenating controller means operably coupled to said speech memory means for selectively combining digital speech data representative of a plurality of sound units in a serial sequence to provide concatenated digital speech data representative of a word;

speech synthesis controller means coupled to said data processing means and to said speech memory means for receiving digital speech signals representative of a sound unit code corresponding to said digital character signals and selectively accessing digital speech data representative of sound units corresponding to said sound unit code from said speech memory means;

speech synthesizer means operably coupled to said concatenating controller means and said speech synthesis controller means for receiving selectively accessed serial sequences of digital speech data from said concatenating controller means to provide audio signals corresponding thereto and representative of synthesized human speech;

voice characteristics conversion means interposed between said concatenating controller means and said speech synthesizer means and being coupled therebetween independently of the coupling between said concatenating controller means and said speech synthesizer means, said voice characteristics conversion means being operably coupled to said speech synthesis controller means and being responsive thereto to selectively modify the voice characteristics of said serially sequenced digital speech data output from said concatenating controller means, said voice characteristics conversion means including

means for making a voice character selection of the synthesized speech to be derived from the digital speech data as selectively accessed from said speech memory means so as to simulate a voice sound differing in character with respect to the voice sound of the synthesized speech from the digital speech data of said speech memory means in the voice characteristics pertaining to the apparent age and/or sex of the speaker;

said digital speech data as selectively accessed from said speech memory means having a predetermined pitch period, a predetermined vocal tract model and a predetermined speech rate;

speech parameter control means for modifying the pitch period and speech rate in response to inputs from said voice character selection means to produce a modified pitch period and a modified speech rate, said speech parameter control means including sample rate control circuit means responsive to inputs from said voice character selection means for adjusting the sampling period of said digital speech data selectively accessed from said speech memory means in a manner altering the digital speech formants contained therein to a preselected degree and providing adjusted sampling period signals as an output;

speech data reconstructing means operably associated with said speech parameter control means for combining the modified pitch period and the modified speech rate with the predetermined vocal tract model into a synthesized speech data format of speech data modified with respect to the original speech data from said speech memory means;

said speech synthesizer means being coupled to said speech data reconstructing means and to the output of said sample rate control circuit means for receiving the modified speech data and the adjusted sampling period signals therefrom in providing said audio signals representative of human speech from the modified speech data; and

audio means coupled to said speech synthesizer means for converting said audio signals into audible synthesized human speech in any one of a plurality of voice sound from said digital speech data stored in said speech memory means as determined by said voice characteristics conversion means.

4,624,013

LINKED COMPONENT EXTRACTION CIRCUIT FOR IMAGE PROCESSOR

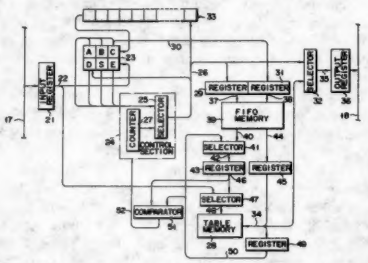
Yukio Urushibata, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 27, 1985, Ser. No. 716,459

Claims priority, application Japan, Mar. 31, 1984, 59-63684

Int. Cl.[4] G06K 9/00

U.S. Cl. 382—9 **12 Claims**



1. A linked component extraction circuit for an image processor in an image processing system having an input image memory for storing input pixel data of a figure, an image processor for processing pixel data read out from said input image memory, and an output image memory for storing output pixel data from said image processor, comprising:

a linked component detector for extracting linked components of the pixel data sequentially supplied from said image memory and for labeling extracted linked components in a predetermined order;

a first-in first-out memory, connected to said linked component detector, for sequentially storing information pairs, each consisting of a first label value generated from said linked component detector and a second label value linked with the first label value and for generating a currently oldest information pair among the information pairs;

a table memory for storing as initial values label values (third label values) corresponding to addresses and for receiving the first label value as address data and the second label value as write data;

first read/write means for reading out the third label value from a memory area at an address of said table memory which corresponds to the first label value of the information pair read out from said first-in first-out memory and for writing the second label value of the information pair read out from said table memory at the address accessed by the first label value;

comparing means for comparing the third label value read out by said first read/write means from said table memory with the second label value as read/write address data for said table memory and for detecting a coincidence between the third label value and the second label value; and

second read/write means for supplying the third label value as address data to said table memory, reading out the third label value from a memory area at the address of said table

memory and writing the second label value of said first-in first-out memory at the address of said table memory when coincidence is not detected by said comparing means.

4,624,014

SIGNAL-SEEKING TUNING SYSTEM WITH A SEACHING MODE ACTIVATED BY THE USER'S OPERATION OF A MANUAL BAND SWITCH

Keming J. Chen, San Diego, Calif., assignor to RCA Corporation, Princeton, N.J.

Filed Jan. 23, 1984, Ser. No. 573,226

Int. Cl.[4] H03J *7/18*

U.S. Cl. 455—168 **10 Claims**

1. In a receiver signal-seeking tuning apparatus, comprising:

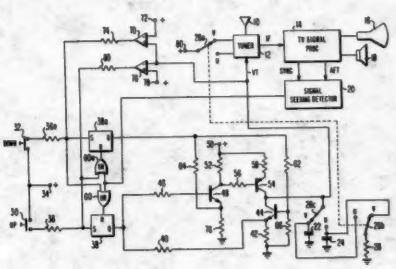
tuning means responsive to the magnitude of a tuning signal for tuning said receiver to receive RF signals occuring in at least two frequency bands to produce an IF signal;

tuning signal generating means responsive to said IF signal produced by said tuning means for generating said tuning signal and changing its magnitude until one of said received RF signals corresponds to an active channel;

band selection means coupled to said tuning signal generating means and manually operable by a user for selecting the frequency band in which said tuning means is to tune; and

search initiating means coupled to said tuning signal generating means and responsive to the manual operation of said band selection means by a user to select the frequency band in which said tuning means is to tune for causing the magnitude of said tuning signal to change in a predetermined sense from a predetermined magnitude when a new band is selected;

said tuning signal generating means including a first capacitor for developing a tuning signal for a first band of frequencies; and a second capacitor for developing a tuning signal for a second band of frequencies;



said search initiating means including charging means for initially charging the one of said first and second capacitors corresponding to the selected band to a predetermined tuning signal level when it is initially selected by the manual operation of said band selection means by a user.

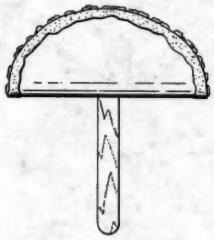
DESIGN PATENTS

GRANTED NOV. 18, 1986

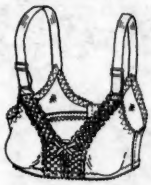
ERRATA

For CLASS	See PATENT NO.
D01-101	286,731

286,700
ICE CREAM SANDWICH
Alan Drazen, Langhorne, Pa., assignor to Simco Sales Service of Pennsylvania, Inc., Philadelphia, Pa.
Division of Ser. No. 564,064, Dec. 21, 1983. This application Dec. 30, 1985, Ser. No. 814,696
Term of patent 14 years
U.S. Cl. D1—102



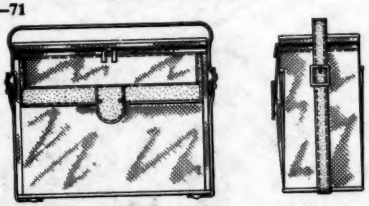
286,701
BRASSIERE
Jeanne M. Martini, Brooklyn, N.Y., assignor to Bali Company, Winston-Salem, N.C.
Filed Apr. 4, 1984, Ser. No. 596,692
Term of patent 14 years
U.S. Cl. D2—24



286,702
BRASSIERE
Jeanne M. Martini, Brooklyn, N.Y., assignor to Bali Company, Winston-Salem, N.C.
Filed Apr. 4, 1984, Ser. No. 596,693
Term of patent 14 years
U.S. Cl. D2—24

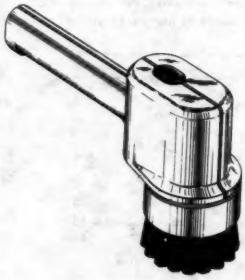
286,703
TOTE BAG
Ira R. Katz, Nashville, and Robert P. Davis, Lebanon, both of Tenn., assignors to Lenox, Inc., Lawrenceville, N.J.
Filed Jan. 20, 1984, Ser. No. 572,555
Term of patent 14 years
U.S. Cl. D3—52

286,704
TOTE BAG
Ira R. Katz, Nashville, and Robert P. Davis, Lebanon, both of Tenn., assignors to Lenox, Inc., Lawrenceville, N.J.
Filed Jan. 20, 1984, Ser. No. 572,550
Term of patent 14 years
U.S. Cl. D3—71

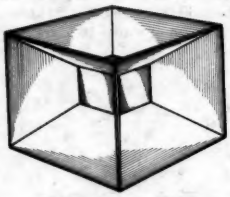


286,705
CASE
Richard Miles, Guildford, England, assignor to Samsonite Corporation, Denver, Colo.
Filed Apr. 23, 1984, Ser. No. 602,868
Claims priority, application United Kingdom, Nov. 1, 1983, 1016030
Term of patent 14 years
U.S. Cl. D3—72

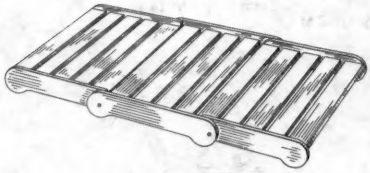
286,706
CORDLESS SHOE POLISHER
Don R. McCloskey, Trappe, Md., assignor to Black & Decker, Inc., Newark, Del.
Filed Apr. 2, 1984, Ser. No. 595,613
Term of patent 14 years
U.S. Cl. D4—102



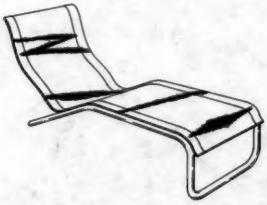
286,707
DISPLAY PYRAMID CUBE
William C. Summers, 922 Comfort, Lansing, Mich. 48915
Filed Jan. 9, 1984, Ser. No. 569,350
Term of patent 14 years
U.S. Cl. D6—301



286,708
ADJUSTABLE LOUNGE SEAT OR SIMILAR ARTICLE
R. Scott Heinson, No. 4 Lindsey Ave., Toronto, Ontario, Canada M6H 1C9
Filed Mar. 1, 1984, Ser. No. 585,201
Claims priority, application Canada, Sep. 1, 1983, 01098315
Term of patent 14 years
U.S. Cl. D6—361



286,709
CHAISE LONGUE
Moses R. Schultz, Barto, Pa., assignor to Knoll International, Inc., New York, N.Y.
Filed Jul. 5, 1983, Ser. No. 510,872
Term of patent 14 years
U.S. Cl. D6—361



286,710

ARMCHAIR

Ruth Gasser, Brissago, Switzerland, assignor to Promade SA, Muralto, Switzerland

Filed Dec. 2, 1983, Ser. No. 557,726
Claims priority, application Italy, Jun. 3, 1983, 22036/83[U]
Term of patent 14 years
U.S. Cl. D6—368

286,711

LAP MOUNTED ADJUSTABLE TRAY

Edward L. Roczey, 1740 Hillsdale La., El Cajon, Calif. 92020

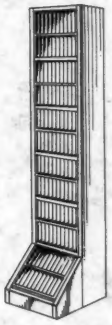
Filed Jan. 3, 1984, Ser. No. 567,679
Term of patent 14 years
U.S. Cl. D6—406

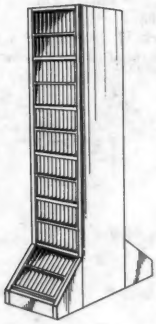
286,712

MODULAR CARTRIDGE STORAGE RACK

Ernest Wittner, North Brunswick, N.J., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 26, 1983, Ser. No. 498,372
Term of patent 14 years
U.S. Cl. D6—407



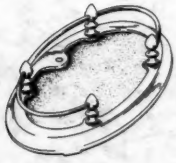


286,713

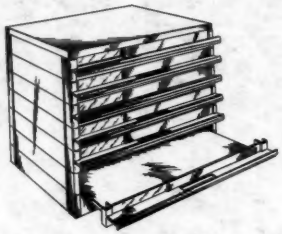
BASE FOR A FIREPLACE TOOL SUPPORT

John S. Adams, 1566 Rockdale Rd., Dubuque, Iowa 52001

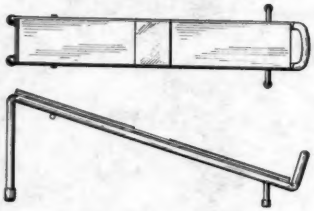
Filed Mar. 7, 1984, Ser. No. 587,147
Term of patent 14 years
U.S. Cl. D6—416



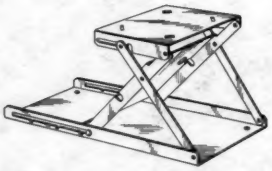
286,714
MODULAR CABINET FOR FILING COMPUTER PRINT-OUTS
Johannes M. Verholt, Uift, Netherlands, assignor to B.V. Briefhouder-en Papierwarenfabriek PAS, Netherlands
Filed Jul. 25, 1983, Ser. No. 516,536
Claims priority, application Benelux, Feb. 3, 1983, 575-46-00
Term of patent 14 years
U.S. Cl. D6—446



286,715
STAND FOR A DESK TOP PRINTER OR THE LIKE
Michael J. Schriner, Bay Village, Ohio, assignor to Data Grip, Inc., Cleveland, Ohio
Filed Dec. 17, 1984, Ser. No. 682,307
Term of patent 14 years
U.S. Cl. D6—462

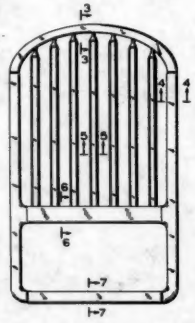


286,716
BOAT SEAT PEDESTAL
James H. Holbrook, Rte. 2, S. Madison, Raymore, Mo. 64083
Filed May 2, 1984, Ser. No. 606,168
Term of patent 14 years
U.S. Cl. D6—496



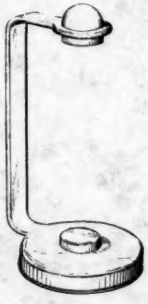
286,717
HEADBOARD FOR A BED
Kenichirou Yosimoto, Hiroshima, Japan, assignor to Dream Sogo Kenkyusho, Hiroshima, Japan
Filed Apr. 12, 1984, Ser. No. 599,385
Claims priority, application Japan, Oct. 18, 1983, 58-045293
Term of patent 14 years
U.S. Cl. D6—505

286,718
CRIB FOOTBOARD
Merlin A. Brunner, New London, and Harvey J. Draheim, Weyauwega, both of Wis., assignors to Simmons Universal Corporation, New York, N.Y.
Filed Apr. 23, 1984, Ser. No. 602,999
Term of patent 14 years
U.S. Cl. D6—505

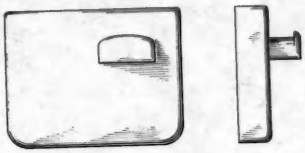


286,719
SIDE PANEL FOR A SHELF UNIT
Irwin J. Ferdinand, Glencoe, Ill., assignor to Hirsh Company, Skokie, Ill.
Filed Nov. 22, 1983, Ser. No. 554,229
Term of patent 14 years
U.S. Cl. D6—511

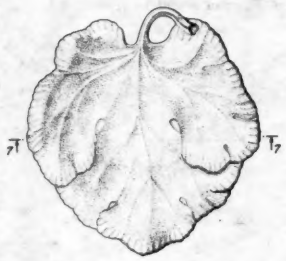
286,720
VERTICAL PAPER ROLL HOLDER
Furio Minuti, Macerata, Italy, assignor to Fratelli Guzzini S.p.A., Recanati, Italy
Filed Jan. 17, 1984, Ser. No. 571,586
Claims priority, application Italy, Jul. 20, 1983, 22422/83[U]
Term of patent 14 years
U.S. Cl. D6—521

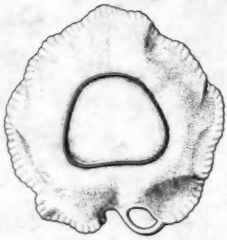


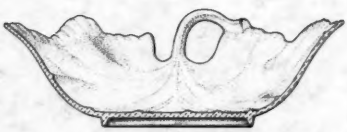
286,721
RACK FOR SCISSORS
Leonhard Hagedorn, Niederneisen, and Rolf-Günter Schülein, Singhofen, both of Fed. Rep. of Germany, assignors to Leifheit AG, Nassau, Fed. Rep. of Germany
Division of Ser. No. 664,115, Oct. 23, 1984, which is a division of Ser. No. 251,566, Apr. 6, 1981, Pat. No. Des. 276,018. This application Oct. 4, 1985, Ser. No. 785,058
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1980, 1061[U]
Term of patent 14 years
U.S. Cl. D6—553



286,722
SNACK BOWL
Larry R. Laslo, New York, N.Y., assignor to American Commercial, Incorporated, Secaucus, N.J.
Filed Jun. 4, 1984, Ser. No. 616,923
Term of patent 14 years
U.S. Cl. D7—5

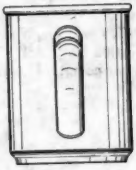






286,723
CUP
Walter Everhan, Klettenberg, Fed. Rep. of Germany, assignor to American Commercial, Incorporated, Secaucus, N.J.
Filed Feb. 3, 1984, Ser. No. 577,065
Term of patent 14 years
U.S. Cl. D7—9

286,724
DRINKING MUG
Young K. Whang, Seoul, Rep. of Korea, assignor to Frank Strafella, Powell, Ohio
Filed May 2, 1983, Ser. No. 490,836
Claims priority, application Rep. of Korea, Nov. 15, 1982, 10122
Term of patent 14 years
U.S. Cl. D7—9

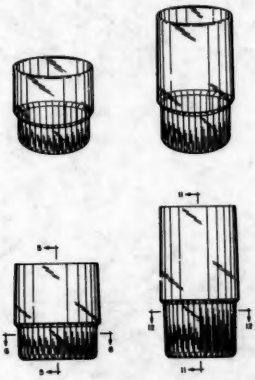


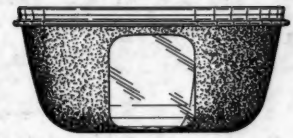
286,725

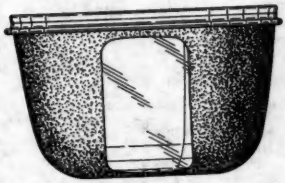
TUMBLER OR THE LIKE

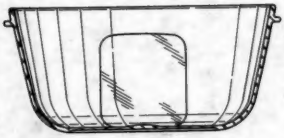
Mark P. Zieff, Lexington, Mass., assignor to Dart Industries, Inc., Northbrook, Ill.

Filed Sep. 29, 1983, Ser. No. 537,873
Term of patent 14 years
U.S. Cl. D7—14







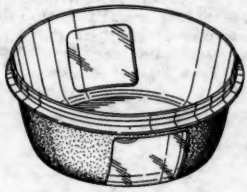


286,726

BOWL

Robert H. C. M. Daenen, Hekelgem, and Victor J. J. Cautereels, Zandhoven, both of Belgium, assignors to Dart Industries Inc., Northbrook, Ill.

Filed Mar. 29, 1984, Ser. No. 594,597
Term of patent 14 years
U.S. Cl. D7—23

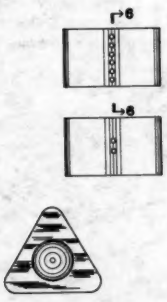


286,727

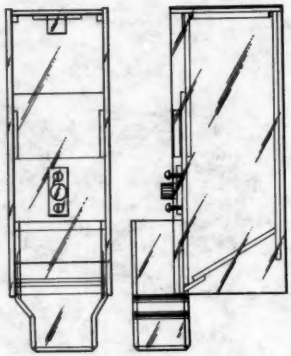
CONDIMENT SHAKER

J. Dean Chavooshian, New York, N.Y., assignor to J. Dean Chavooshian, Inc., New York, N.Y.

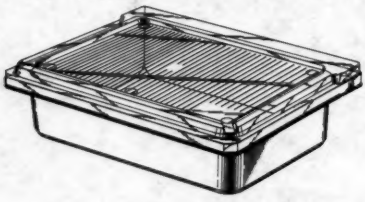
Filed Nov. 3, 1983, Ser. No. 548,330
Term of patent 14 years
U.S. Cl. D7—54



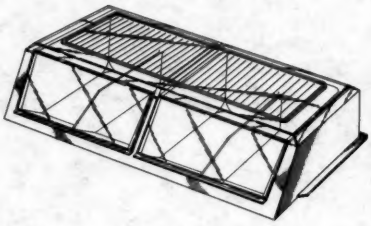
286,728
BULK FOOD DISPENSER
James N. Elmore, Rte. 1, Box 152, Ferndale, Ark. 72208
Filed Dec. 6, 1984, Ser. No. 678,645
Term of patent 14 years
U.S. Cl. D7—76



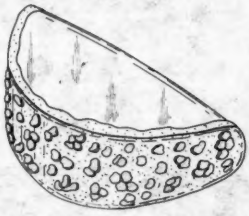
286,729
FOOD BOX WITH HINGED LID
Guy Tzifkansky, Hauts-de-Seine, and Jean-Claude Marchais, Val-de-Marne, both of France, assignors to Cidelcem, S.A., Paris, France
Filed Apr. 4, 1984, Ser. No. 596,738
Claims priority, application France, Oct. 14, 1983, 83 3757
Term of patent 14 years
U.S. Cl. D7—76



286,730
COMPARTMENTED FOOD BOX WITH LID AND SHUTTERS
Guy Tzifkansky, Hauts-de-Seine, and Jean-Claude Marchais, Val-de-Marne, both of France, assignors to Cidelcem, S.A., Paris, France
Filed Apr. 4, 1984, Ser. No. 596,737
Claims priority, application France, Oct. 14, 1983, 83 3756
Term of patent 14 years
U.S. Cl. D7—81

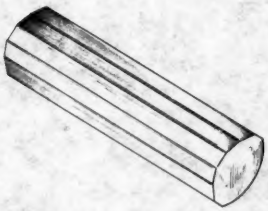


286,731
ICE CREAM SANDWICH
Alan S. Drazen, South Langhorne, Pa., assignor to Simco Sales Service of Pennsylvania, Philadelphia, Pa.
Filed Dec. 21, 1983, Ser. No. 564,064
Term of patent 14 years
U.S. Cl. D1—101

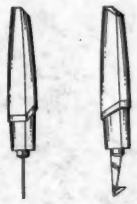


286,732
VACUUM JUG
Arne P. Darnell, Karlshamn, Sweden, assignor to Hammarplast AB, Tingsryd, Sweden
Filed Sep. 28, 1983, Ser. No. 536,738
Claims priority, application Sweden, Mar. 30, 1983, 918/83
Term of patent 14 years
U.S. Cl. D7—319

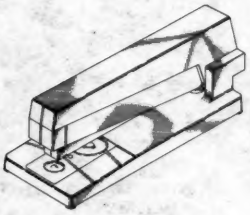
286,733
COMBINED PROOFING AND DOUGH RAISING TRAY
William R. Dahlke, 5351 Chippendale Cir., Fort Myers, Fla. 33907
Filed Jan. 20, 1984, Ser. No. 572,393
Term of patent 14 years
U.S. Cl. D7—357



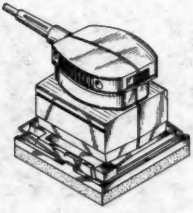
286,734
PILL BOTTLE OPENER
Donald D. Furman, Beloit, Wis., assignor to Ozburn-Janesville Corporation, Janesville, Wis.
Filed Jan. 16, 1984, Ser. No. 570,875
Term of patent 14 years
U.S. Cl. D8—41



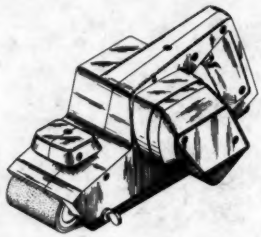
286,735
STAPLER
Yoshiyuki Ebihara, Tokyo, Japan, assignor to Etona Co., Ltd., Tokyo, Japan
Filed Feb. 29, 1984, Ser. No. 585,345
Term of patent 14 years
U.S. Cl. D8—50



286,736
ELECTRIC SANDER
Robert I. Somers, Raleigh, N.C., assignor to Black & Decker Inc., Newark, Del.
Filed Jul. 23, 1984, Ser. No. 633,536
Term of patent 14 years
U.S. Cl. D8—62

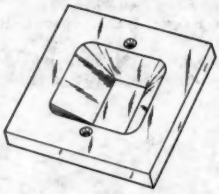


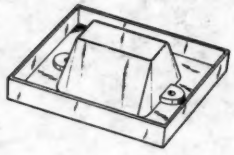
286,737
BELT SANDER
Lawrence E. House, II; Robert I. Somers, and John M. Dziedzic, all of Raleigh, N.C., assignors to Black & Decker Inc., Newark, Del.
Filed Apr. 4, 1984, Ser. No. 596,677
Term of patent 14 years
U.S. Cl. D8—62



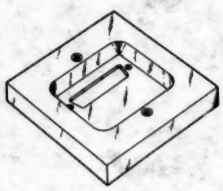
286,738
SHARPENER FOR ICE SKATE BLADES
Leon Lucko, 3727 Elma Rd., Pasadena, Calif. 91107
Filed Dec. 11, 1984, Ser. No. 680,346
Term of patent 14 years
U.S. Cl. D8—91

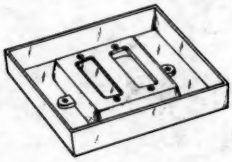
286,739
PROTECTIVE COVER FOR LOW VOLTAGE EQUIPMENT
Arne Larsson, Örebro, Sweden, assignor to Svagströms Montage HB, Örebro, Sweden
Filed Mar. 21, 1984, Ser. No. 591,867
Claims priority, application Sweden, Sep. 26, 1983, 83-2466
Term of patent 14 years
U.S. Cl. D8—353





286,740
PROTECTIVE COVER FOR LOW VOLTAGE EQUIPMENT
Arne Larsson, Örebro, Sweden, assignor to Svagströms Montage HB, Örebro, Sweden
Filed Mar. 21, 1984, Ser. No. 591,868
Claims priority, application Sweden, Sep. 26, 1983, 83-2467
Term of patent 14 years
U.S. Cl. D8—353

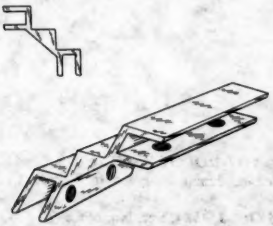




286,741
TRAP HOLDER
Robert E. Clauss, 5690 Lakeview Dr., Rte. 3, Hale, Mich. 48739
Filed Feb. 27, 1984, Ser. No. 583,690
Term of patent 14 years
U.S. Cl. D8—373

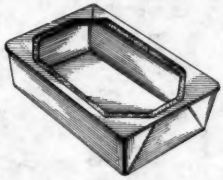
286,742
COMBINED STANDARD AND BRACKET FOR WALL MOUNTED SHELVES
Gerhard Gohrig, Ramsdorfer Postweg 27, D-4820 Borken, Fed. Rep. of Germany
Filed Feb. 29, 1984, Ser. No. 584,878
Term of patent 14 years
U.S. Cl. D8—381

286,743
PANEL CONNECTOR
Elaine Cohen, P.O. Box 830, High Point, N.C. 27261
Filed May 29, 1984, Ser. No. 614,963
Term of patent 14 years
U.S. Cl. D8—394



286,744
COMBINED THIMBLE NUT AND WASHER
Malcolm S. Bethea, 232 Poinciana Dr., Birmingham, Ala. 35209
Filed Nov. 13, 1984, Ser. No. 671,111
Term of patent 14 years
U.S. Cl. D8—397

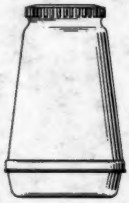
286,745
PACKAGING TRAY FOR FOOD OR THE LIKE
Hampton E. Forbes, Jr., Wilmington, Del., assignor to Westvaco Corporation, New York, N.Y.
Filed Aug. 3, 1984, Ser. No. 637,603
Term of patent 14 years
U.S. Cl. D9—416



286,746
DISPENSING CONTAINER
Christopher L. Gamble, 2040 E. Howe, Tempe, Ariz. 85281, and Wayne E. Craven, 7938 E. Coronado Rd., Scottsdale, Ariz. 85257
Filed May 7, 1984, Ser. No. 607,756
Term of patent 14 years
U.S. Cl. D9—302

286,747
COMBINED PACKAGING AND DISPENSING CONTAINER FOR EXTRUSIBLE COMESTIBLES
Andrew T. Kostanecki, Darien, Conn., assignor to General Foods Corporation, White Plains, N.Y.
Filed May 1, 1984, Ser. No. 606,080
Term of patent 14 years
U.S. Cl. D9—302

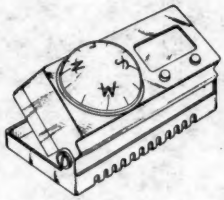
286,748
PACKAGING CONTAINER
Vincent E. Fortuna, Huntington Beach, Calif., assignor to Cosden Technology, Inc., Dallas, Tex.
Filed Sep. 26, 1983, Ser. No. 536,560
The portion of the term of this patent subsequent to Nov. 18, 2000, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—389



286,749
PACKAGING CONTAINER
Vincent E. Fortuna, Huntington Beach, Calif., assignor to Cosden Technology, Inc., Dallas, Tex.
Filed Sep. 26, 1983, Ser. No. 536,563
The portion of the term of this patent subsequent to Nov. 18, 2000, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—389

286,750
BOTTLE
Leslie Hamilton, Trenton; Robert D. Holewinski, Lakehurst, and William J. Blatherwick, Hamilton Square, all of N.J., assignors to Johnson & Johnson Dental Products Company, East Windsor, N.J.
Filed Apr. 9, 1984, Ser. No. 597,899
Term of patent 14 years
U.S. Cl. D9—423

286,751
COMBINED COMPASS AND DIGITAL CLOCK OR THE LIKE
Hsien-Chang Hsieh, 17-3, Lane 181, Chia Hsing Street, Taipei, Taiwan
Filed Mar. 7, 1984, Ser. No. 587,095
Term of patent 14 years
U.S. Cl. D10—2

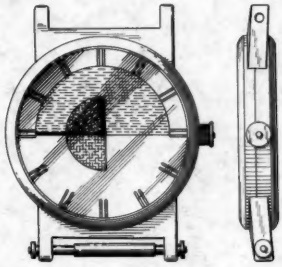


286,752
TOY ROBOT WATCH
Junji Yamano, Tokyo, Japan, assignor to Takara Co., Ltd., Tokyo, Japan
Filed Oct. 1, 1984, Ser. No. 656,597
Claims priority, application Japan, May 30, 1984, 59-22203
Term of patent 14 years
U.S. Cl. D10—35

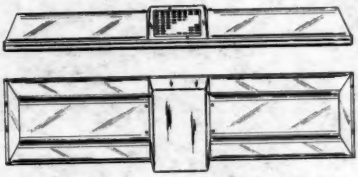
286,753
WRIST WATCH CASE
John R. Loring, New York, N.Y., assignor to Tiffany and Company, New York, N.Y.
Filed Jan. 19, 1984, Ser. No. 572,295
Term of patent 14 years
U.S. Cl. D10—39

286,754
WRIST WATCH
Giulio Manfredi, Varese, Italy, assignor to Gioielleria Manfredi snc, Varese, Italy
Filed Jun. 7, 1984, Ser. No. 618,052
Claims priority, application Italy, Dec. 15, 1983, 60957/83[U]
Term of patent 14 years
U.S. Cl. D10—39

286,755
WRIST WATCH
Giulio Manfredi, Varese, Italy, assignor to Gioielleria Manfredi snc, Varese, Italy
Filed Jun. 7, 1984, Ser. No. 618,053
Claims priority, application Italy, Dec. 15, 1983, 60958/83[U]
Term of patent 14 years
U.S. Cl. D10—39



286,756
COMBINED LIGHT AND SPEAKER HOUSING FOR EMERGENCY VEHICLES
W. Kenneth Menke, Glendale, and Thomas E. Wagner, Kirkwood, both of Mo., assignors to Public Safety Equipment, Inc., St. Louis, Mo.
Filed Sep. 24, 1984, Ser. No. 653,600
Term of patent 14 years
U.S. Cl. D10—114

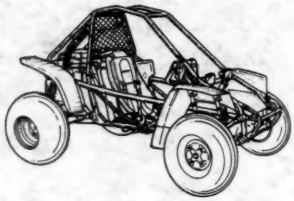


286,757
LINK CHAIN
Kurt Klier, and Heinz Klier, both of Kaufbeuren-Neugablonz, Fed. Rep. of Germany, assignors to E. H. Ashley & Company, Inc., Providence, R.I.
Filed Jul. 23, 1984, Ser. No. 634,130
Term of patent 14 years
U.S. Cl. D11—18

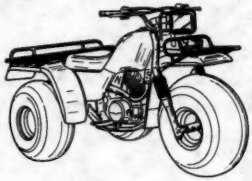
286,758
EARRING
Marina Bulgari, Athens, Greece, assignor to Marina B. Creation, S.A., Vaduz, Liechtenstein
Filed Oct. 9, 1984, Ser. No. 658,782
Claims priority, application Italy, Apr. 9, 1984, 35715/84[U]
Term of patent 14 years
U.S. Cl. D11—43

286,759
SUPPORT PLATE FOR POTTED PLANTS
Alvar Lundgren; Anders Lundgren, both of Gothenburg, and Bertil Holmgren, Trelleborg, all of Sweden, assignors to Renovo Konsult AB, Bjärred, Sweden
Filed Feb. 22, 1984, Ser. No. 582,301
Claims priority, application Sweden, Aug. 23, 1983, 83-2142
Term of patent 14 years
U.S. Cl. D11—164

286,760
FOUR WHEEL VEHICLE
Yasuhiro Ooba, Saitama; Kazuhiko Saito, Tokyo, and Mitsuru Yamamoto, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed May 23, 1984, Ser. No. 613,512
Claims priority, application Japan, Nov. 24, 1983, 58-50963
Term of patent 14 years
U.S. Cl. D12—87

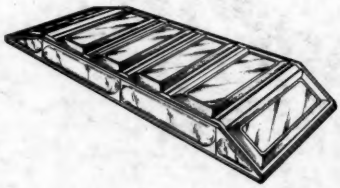


286,761
MOTOR TRICYCLE
Gen Tamura; Akira Watanabe, both of Tokyo, and Yukinori Kawaguchi, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 12, 1984, Ser. No. 660,460
Claims priority, application Japan, Apr. 18, 1984, 59-15629
Term of patent 14 years
U.S. Cl. D12—110



286,762
INVALID CHAIR
Elizabeth A. Britz, 2303 First St., New Port Richy, Fla. 33552
Filed Dec. 14, 1984, Ser. No. 682,026
Term of patent 14 years
U.S. Cl. D12—128

286,763
TRUCK CANOPY
Vahe Karapetian, 4801 Los Feliz Blvd., Los Angeles, Calif. 90027
Filed Dec. 21, 1983, Ser. No. 563,965
Term of patent 14 years
U.S. Cl. D12—156



286,764

UTILITY BOAT

Tommy P. Turner, Battle Creek, Mich., assignor to Turner Enterprises, Inc., Battle Creek, Mich.

Filed Jan. 9, 1984, Ser. No. 569,325

Term of patent 14 years

U.S. Cl. D12—300

286,765

ELECTROMAGNETIC RELAY HOUSING

Robert E. Prouty, and Ronald W. Goodrich, both of Logansport, Ind., assignors to Hamilton Standard Controls, Inc., Windsor Locks, Conn.

Filed Nov. 26, 1984, Ser. No. 675,106

Term of patent 14 years

U.S. Cl. D13—12

286,766

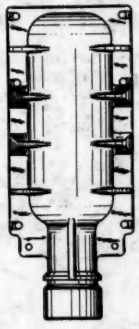
ELECTRICAL CONNECTOR HOUSING

David O. Gallusser, Oneonta; David W. MacAvoy, Bainbridge; David L. Frear, Afton, and Stephen Punako, Bainbridge, all of N.Y., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jul. 29, 1983, Ser. No. 518,577

Term of patent 14 years

U.S. Cl. D13—24



286,767

BATTERY TERMINAL POST CLAMP

Lars Eriksson, Djurgardsvagen 15, S-633 40 Eskilstuna, Sweden

Filed Nov. 23, 1983, Ser. No. 554,722

Term of patent 14 years

U.S. Cl. D13—24

286,768

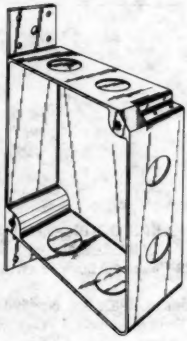
ELECTRICAL OUTLET BOX

Richard J. Borsh, Chagrin Falls; Robert W. Ripley, Brecksville, and Harold T. Pate, Solon, all of Ohio, assignors to TBG Inc., New York, N.Y.

Filed Jul. 29, 1983, Ser. No. 518,656

Term of patent 14 years

U.S. Cl. D13—30



286,769

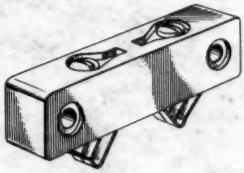
FOIL TAKEOFF SWITCH OR SIMILAR ARTICLE

Isadore Gepner, Elmont, and Arthur W. Shaw, Syosset, both of N.Y., assignors to Pittway Corporation, Syosset, N.Y.

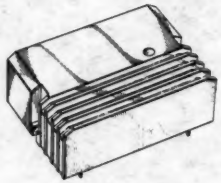
Filed May 13, 1983, Ser. No. 494,271

Term of patent 14 years

U.S. Cl. D13—32



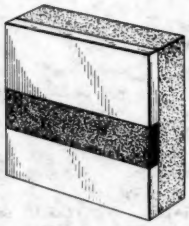
286,770
CASING OF AN ELECTRICAL OR ELECTRONIC DEVICE
Domenic Melcher, Ackerstrasse 56, Uster, Switzerland CH8610
Filed Apr. 6, 1984, Ser. No. 597,431
Claims priority, application United Kingdom, Nov. 8, 1983, 1016155; Japan, Feb. 9, 1984, 410484
Term of patent 14 years
U.S. Cl. D13—40



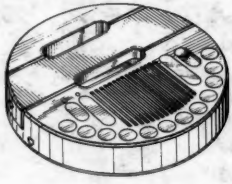
286,771
COMBINED SPEAKER DIAPHRAGM AND BAFFLE THEREFOR
Erazm A. Willy, 128 Country Manor Way, Apt. 17, Webster, N.Y. 14580
Filed Jun. 2, 1983, Ser. No. 500,431
Term of patent 14 years
U.S. Cl. D14—30

286,772
HEADSET FOR BIO-ELECTRONIC EQUIPMENT
Lowell K. Pope, P.O. Box 1431, Wrightwood, Calif. 92397
Filed May 21, 1984, Ser. No. 612,402
Term of patent 14 years
U.S. Cl. D14—36

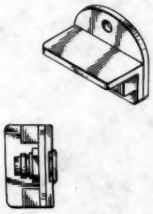
286,773
REMOTE COMMUNICATIONS MODULE
Rodney M. Pauser, Bloomington, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Dec. 14, 1983, Ser. No. 561,448
Term of patent 14 years
U.S. Cl. D14—52



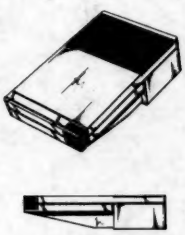
286,774
WALL TELEPHONE
Eric H. Geis; Thomas P. Eisenstadt; Kurt Kauffman, and Robert E. Lee, all of Burbank, Calif., assignors to TeleQuest, Inc., Burbank, Calif.
Filed Oct. 18, 1984, Ser. No. 662,369
Term of patent 14 years
U.S. Cl. D14—56



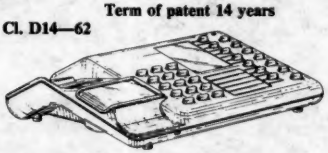
286,775
KEY LOCK MOUNT FOR TELEPHONE
Irving L. Gudin, 13 Glen Dr., Bardonia, N.Y. 10954
Filed Dec. 18, 1984, Ser. No. 683,020
Term of patent 14 years
U.S. Cl. D14—59



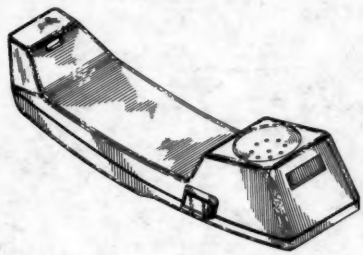
286,776
TELEPHONE SET BASE
Floyd Pushelberg, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada
Filed Dec. 6, 1984, Ser. No. 678,943
Term of patent 14 years
U.S. Cl. D14—60

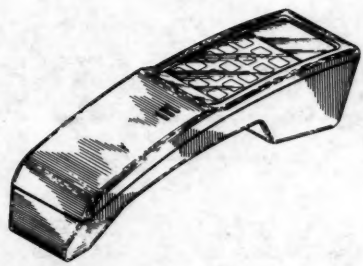


286,777
TELEPHONE BASE WITH DIALING MEANS
Oliver H. S. Bishop, London, England, assignor to STC plc, London, England
Filed Jun. 5, 1984, Ser. No. 617,571
Claims priority, application United Kingdom, Dec. 22, 1983, 1017027
Term of patent 14 years
U.S. Cl. D14—62

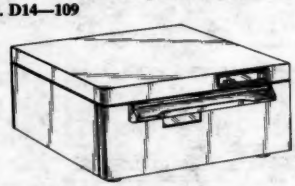


286,778
VEHICULAR HANDSET TELEPHONE CONTROL UNIT OR SIMILAR ARTICLE
Thomas G. Beaumont, Bedford, Tex., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Apr. 10, 1984, Ser. No. 598,659
Term of patent 14 years
U.S. Cl. D14—64

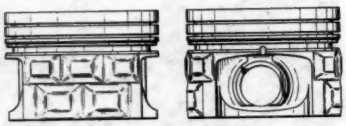




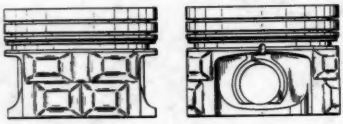
286,779
STORAGE DEVICE FOR IMAGE INFORMATION STORING/RETRIEVING MACHINE
Shigeru Sutoh, Urawa; Tooru Okuyama, Isehara, and Kunio Hara, Chiba, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed May 24, 1984, Ser. No. 613,645
Claims priority, application Japan, Nov. 29, 1983, 58-51470
Term of patent 14 years
U.S. Cl. D14—109



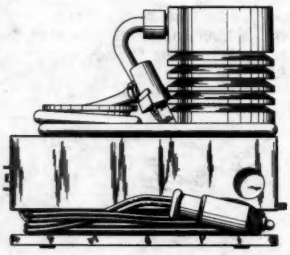
286,780
PISTON
John G. Collyear, and David A. Parker, both of Rugby, England, assignors to AE PLC, Warwickshire, England
Filed Mar. 30, 1984, Ser. No. 595,455
Claims priority, application United Kingdom, Sep. 30, 1983, 1015426
The portion of the term of this patent subsequent to Nov. 18, 2000, has been disclaimed.
Term of patent 14 years
U.S. Cl. D15—5



286,781
PISTON
John G. Collyear, and David A. Parker, both of Rugby, England, assignors to AE PLC, Warwickshire, England
Filed Mar. 30, 1984, Ser. No. 595,456
Claims priority, application United Kingdom, Sep. 30, 1983, 1,015,427
The portion of the term of this patent subsequent to Nov. 18, 2000, has been disclaimed.
Term of patent 14 years
U.S. Cl. D15—5



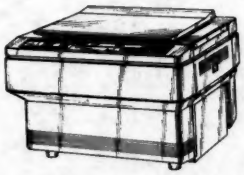
286,782
ELECTRIC AIR INFLATOR
Robert I. Somers, Raleigh, N.C., assignor to Black & Decker, Inc., Newark, Del.
Filed Feb. 9, 1984, Ser. No. 578,564
Term of patent 14 years
U.S. Cl. D15—7



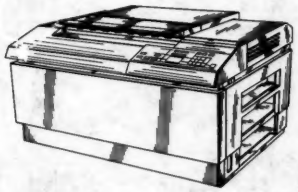
286,783
AGRICULTURAL IMPLEMENT
William M. Johnson, Winchlesea, Australia, assignor to Ralph McKay Limited, Maidstone, Australia
Filed Dec. 27, 1984, Ser. No. 686,666
Term of patent 14 years
U.S. Cl. D15—29

286,784
COMPRESSION MOLDING PRESS FOR MOUNTING METALLURGICAL SPECIMENS
Tracy C. Jarrett, Denver, Colo., assignor to Jarrett Systems, Inc., Denver, Colo.
Filed Apr. 23, 1984, Ser. No. 602,900
Term of patent 14 years
U.S. Cl. D15—123

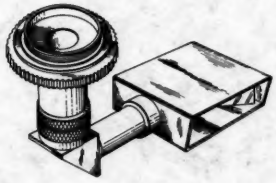
286,785
ELECTRONIC COPYING MACHINE
Tooru Okuyama, Isehara, and Kunio Hara, Chiba, both of Japan, assignors to Kabushiki Kaisha Toshiba, Japan
Filed Dec. 13, 1984, Ser. No. 681,274
Claims priority, application Japan, Jun. 19, 1984, 59-24985
Term of patent 14 years
U.S. Cl. D16—31



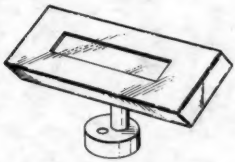
286,786
ELECTROSTATIC COPIER
Andrew T. Serbinski, Brooklyn, and Yasuhiro Okuda, New York, both of N.Y., assignors to Ricoh Company, Ltd., Japan
Filed Jan. 24, 1983, Ser. No. 460,586
Claims priority, application Japan, Jul. 22, 1982, 033,283/82
Term of patent 14 years
U.S. Cl. D16—31



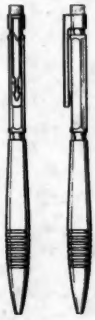
286,787
OPTICAL COUPLER FOR COUPLING A TELEVISION CAMERA TO A SURGICAL HEADBAND
Richard E. Feinbloom; Melvin Levine, both of New York, and Lung T. Yee, Brooklyn, all of N.Y., assignors to Designs for Vision, Inc., Ronkomkoma, N.Y.
Filed Nov. 7, 1983, Ser. No. 549,321
Term of patent 14 years
U.S. Cl. D16—130



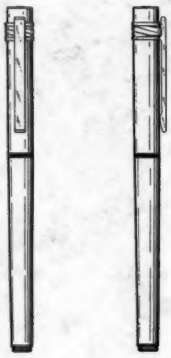
286,788
DISPLAY UNIT FOR USE WITH CASH REGISTER SYSTEMS
Leonardus P. Koppens, Industrieweg 5, Bladel, Netherlands NL-5531 AD
Filed Feb. 17, 1983, Ser. No. 467,228
Claims priority, application Benelux, Sep. 2, 1982, 57121-01
Term of patent 14 years
U.S. Cl. D18—4



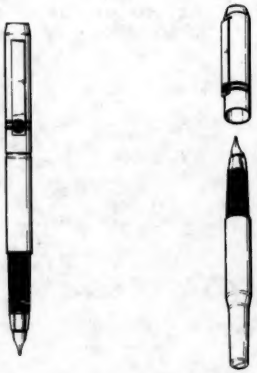
286,789
MECHANICAL PENCIL
John Thompson, Janesville, and Martin E. Wacha, Beloit, both of Wis., assignors to Parker Pen (Benelux) B.V., Netherlands
Filed May 9, 1984, Ser. No. 608,406
Term of patent 14 years
U.S. Cl. D19—48



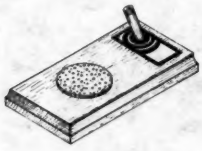
286,790
WRITING INSTRUMENT
Pierre Bove, Fribourg, Switzerland, assignor to Interdica S.A., Villars-sur-Glane, Switzerland
Filed Feb. 23, 1984, Ser. No. 582,732
Claims priority, application Hague, Aug. 24, 1983, 73 415
Term of patent 14 years
U.S. Cl. D19—50



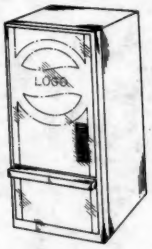
286,791
FOUNTAIN PEN
Brian A. J. Booker, New Haven, England, assignor to The Parker Pen Company, Janesville, Wis.
Filed Jul. 2, 1984, Ser. No. 627,100
Claims priority, application United Kingdom, Feb. 27, 1984, 1018191
Term of patent 14 years
U.S. Cl. D19—51



286,792
DESK NOVELTY, NOVELTY PLAQUE OR SIMILAR ARTICLE
Donald A. Foster, 412 Ridge View Dr., Port Angeles, Wash. 98362-9152
Filed Apr. 3, 1984, Ser. No. 596,326
Term of patent 14 years
U.S. Cl. D19—75

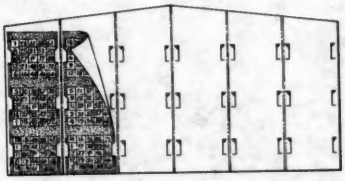


286,793
VENDING MACHINE FOR BEVERAGES OR THE LIKE
Sondra Schoultz, Hartsdale, N.Y., assignor to PepsiCo Inc., Purchase, N.Y.
Filed Aug. 5, 1983, Ser. No. 520,822
Term of patent 14 years
U.S. Cl. D20—1



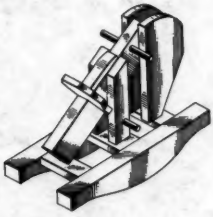
286,794
SIGN
Gary L. Bayless, and Armando Amaya, both of Homestead, Fla., assignors to Vertner H. Harben, III, Homestead, Fla., a part interest
Filed Jun. 22, 1984, Ser. No. 623,702
Term of patent 14 years
U.S. Cl. D20—41

286,795
HOLDER FOR BINGO SHEETS OR THE LIKE
Henry H. Swartz, and Margie E. Swartz, both of 15538 Maple Tree Dr., Punta Gorda, Fla. 33955
Filed Dec. 18, 1985, Ser. No. 810,280
Term of patent 14 years
U.S. Cl. D21—54

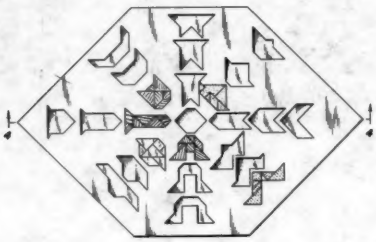


286,796
TOY MUSIC BOX
Carl J. Simmons, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Jan. 23, 1985, Ser. No. 693,762
Term of patent 14 years
U.S. Cl. D21—64

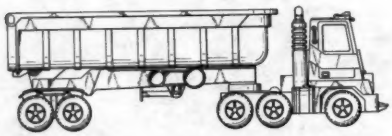
286,797
OIL WELL PUMP RIDING TOY
Judy Mulkey-Hartis, 906 W. Kiowa, Hobbs, N. Mex. 88240
Filed Mar. 7, 1984, Ser. No. 587,288
Term of patent 14 years
U.S. Cl. D21—66



286,798
COMBINED TOY PUZZLE AND PUZZLE PIECES THEREFOR
Lutz Kröber, Abbachstresse 24, 8000 München 50, Fed. Rep. of Germany
Filed Aug. 15, 1984, Ser. No. 641,013
Claims priority, application Fed. Rep. of Germany, Feb. 17, 1984, 11-AR 665/84
Term of patent 14 years
U.S. Cl. D21—104

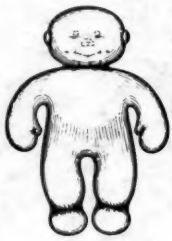


286,799
TOY TRUCK
Robert C. Fisher, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Feb. 2, 1984, Ser. No. 576,268
Term of patent 14 years
U.S. Cl. D21—140

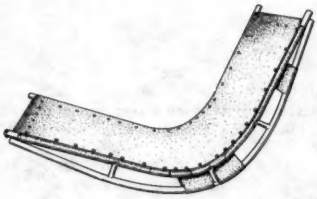


286,800
RECONFIGURABLE TOY HAWK
Masaki Maruyama, Tokyo, Japan, assignor to Takara Co., Ltd., Tokyo, Japan
Filed May 30, 1984, Ser. No. 616,596
Claims priority, application Japan, Jan. 31, 1984, 59-3048
Term of patent 14 years
U.S. Cl. D21—160

286,801
DOLL
Susan Anderson, and Audrey A. Boxwell, both of Fraser, Colo., assignors to St. Louis Creek Trading Company, Winter Park, Colo.
Filed Oct. 5, 1984, Ser. No. 657,989
Term of patent 14 years
U.S. Cl. D21—166



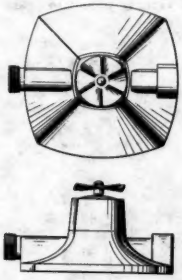
286,802
PHYSIOLOGICAL EXERCISER
Lennart Ahlberg, Stenstrand - Torö149 00 Nynashamn, Sweden
Filed Apr. 24, 1984, Ser. No. 603,959
Claims priority, application Sweden, Nov. 2, 1983, 83-2868
Term of patent 14 years
U.S. Cl. D21—191



286,803
LACROSSE STICK HEAD
William H. Brine, Jr., Weston, Mass., assignor to W. H. Brine Co., Milford, Mass.
Filed Jun. 29, 1984, Ser. No. 626,060
Term of patent 14 years
U.S. Cl. D21—210

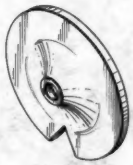
286,804
SWIM FIN
Kevin I. McCarthy, 7500 Vieja Castilla Way No. 1, La Costa, Calif. 92008
Filed Feb. 13, 1984, Ser. No. 579,572
Term of patent 14 years
U.S. Cl. D21—239

286,805
SPRINKLER
James M. Jennison, Anaheim, and Jacob de Gelder, Palos Verdes Peninsula, both of Calif., assignors to Thompson Manufacturing Company, Chino, Calif.
Filed Mar. 8, 1984, Ser. No. 587,354
Term of patent 14 years
U.S. Cl. D23—6

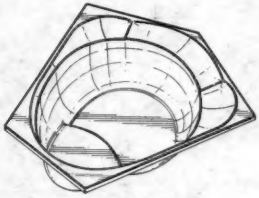


286,806
PURGING PUMP FOR PLUMBING SYSTEMS
Desmond C. Drummond, Newmarket, England, assignor to Desmond C. Drummond, Suffolk, England
Filed Jul. 16, 1984, Ser. No. 631,292
Term of patent 14 years
U.S. Cl. D23—15

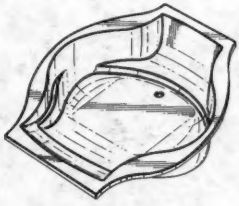
286,807
ORIFICE PLATE FOR A RADIATOR VALVE
Edward Paige, 2525 Fifth Ave., East Meadow, N.Y. 11554
Filed May 9, 1983, Ser. No. 492,882
Term of patent 14 years
U.S. Cl. D23—34



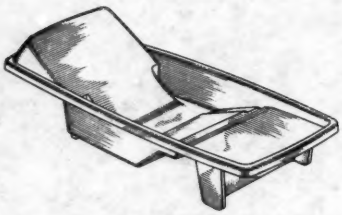
286,808
BATHTUB
William H. Griffiths, St. Albans, England, assignor to Bonsack Baths (London) Limited, West Midlands, England
Filed Dec. 26, 1984, Ser. No. 686,381
Claims priority, application United Kingdom, Jul. 5, 1984, 1020738
Term of patent 14 years
U.S. Cl. D23—55



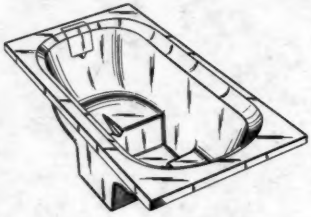
286,809
BATHTUB
William H. Griffiths, St. Albans, England, assignor to Bonsack Baths (London) Limited, West Midlands, England
Filed Dec. 26, 1984, Ser. No. 686,382
Claims priority, application United Kingdom, Jul. 5, 1984, 1020737
Term of patent 14 years
U.S. Cl. D23—55



286,810
BABY BATH
Robert L. Greene, 25271 Pacific Ave., Mission Viego, Calif. 92691
Filed Jan. 3, 1984, Ser. No. 567,576
Term of patent 14 years
U.S. Cl. D23—52



286,811
DUAL SEATED BATHTUB
Harvey E. Diamond, 12953 Woodbridge St., Studio City, Calif. 91604
Filed Jan. 20, 1984, Ser. No. 572,644
Term of patent 14 years
U.S. Cl. D23—55

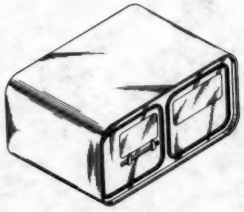


286,812
STOVE
Cyril L. Rennels, 654 Moorwood Rd., Telford, Pa. 18969
Filed Feb. 6, 1984, Ser. No. 577,509
Term of patent 14 years
U.S. Cl. D23—97

286,813
AIR CLEANER
Franco Scarperi, and Herbert Nix, both of Hamburg, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Jul. 10, 1984, Ser. No. 628,946
Claims priority, application United Kingdom, Jan. 13, 1984, 1.017.311
Term of patent 14 years
U.S. Cl. D23—150

286,814
ACOUSTIC OTOSCOPE
Edward C. Brainard, II, 312 Delano Rd.; Russell N. Chute, 103 Old Knoll Rd., both of Marion, Mass. 02738, and Mark A. Fortin, 100 Brown St., North Dartmouth, Mass. 02747
Filed Mar. 5, 1984, Ser. No. 586,218
Term of patent 14 years
U.S. Cl. D24—17

286,815
BLOOD VESSEL MONITOR
Robert J. Graumann, Jacksonville, Fla., assignor to Bristol-Myers Company, New York, N.Y.
Filed Feb. 15, 1984, Ser. No. 580,221
Term of patent 14 years
U.S. Cl. D24—21

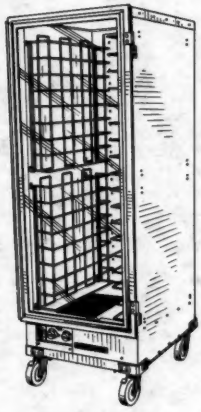


286,816
DISPENSER AID FOR AEROSOL CONTAINERS
Robert E. Newell, Pinner, England, assignor to Glaxo Group Limited, London, England
Filed Jan. 30, 1984, Ser. No. 575,024
Term of patent 14 years
U.S. Cl. D24—62

286,817
SELF-CLEANING SANITARY TOILET
Marco Zanuso, Milan, Italy, assignor to I.C.A. S.p.A. Industria Componenti per l'Architettura, Pomezia, Italy
Filed Oct. 4, 1983, Ser. No. 538,877
Claims priority, application Italy, Apr. 12, 1983, 21507/83[U]
Term of patent 14 years
U.S. Cl. D25—16

286,818
DESK LAMP
Hartmut S. Engel, Freiberg, Fed. Rep. of Germany, assignor to 501 Brillantleuchten AG, Gnarrenburg, Fed. Rep. of Germany
Filed May 18, 1984, Ser. No. 611,700
Term of patent 14 years
U.S. Cl. D26—62

286,819
MOBILE FOOD CABINET
Robert J. Cohn, Dallas, Pa., assignor to Metropolitan Wire Corporation, Wilkes-Barre, Pa.
Filed Oct. 12, 1983, Ser. No. 541,069
Term of patent 14 years
U.S. Cl. D34—19



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 18TH DAY OF NOVEMBER, 1986

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. E. Staley Manufacturing Company: *See*—
Katt, Judy L.; Moore, Carl O.; and Eastman, James E., 4,623,549, Cl. 426-548.000.

A. O. Smith Corporation: *See*—
Smith, Howard W.; and Douthart, Robert H., 4,623,829, Cl. 318-793.000.

A. W. Faber-Castell GmbH & Co.: *See*—
Jankewitz, Axel, 4,622,985, Cl. 132-88.500.

A. Zulkowitz Associates: *See*—
Zulkowitz, Albert J., 4,623,324, Cl. 493-462.000.

Abbott Laboratories: *See*—
Beard, Robert W., 4,622,966, Cl. 128-303.140.
Sperinde, John M., 4,623,248, Cl. 356-41.000.
Summers, James B., Jr., 4,623,661, Cl. 514-575.000.

Abe, Syuzi; and Ito, Shin'ichi, to Matsushita Electric Industrial Co., Ltd. Control system for clothes dryer. 4,622,759, Cl. 34-44.000.

Abe, Takao: *See*—
Koshizuka, Kunihiro; Abe, Takao; Kitamura, Shigehiro; Nakamura, Masaki; Hotta, Yuji; and Ishii, Fumio, 4,623,580, Cl. 428-216.000.

Abou, Shouji, to Kabushiki Kaisha Toshiba. Voltage controlled oscillator using flip-flop controlled switching circuits. 4,623,851, Cl. 331-111.000.

Abou, Shouji; and Chikaoka, Keiko, to Kabushiki Kaisha Toshiba. Voltage controlled oscillator having frequency independent of process parameters. 4,623,852, Cl. 331-111.000.

Abrams, Jack Z.; and Sherwin, Robert M., to Bechtel International Corporation. Method for reduction of SO_2 emission for fossil fired boiler. 4,623,523, Cl. 423-242.000.

Abthoff, Jorg; Schuster, Hans-Dieter; Wollenhaupt, Gottfried; Loose, Gunter; and Busch, Michael-Rainer, to Daimler-Benz Aktiengesellschaft. Method and apparatus for monitoring and adjusting λ-probe-controlled catalytic exhaust gas emission control systems of internal combustion engines. 4,622,809, Cl. 60-274.000.

Ackerman, Mark S.; and Parker, Glenn, to General Computer Company. Process for displaying a plurality of objects on a video screen. 4,623,147, Cl. 273-1.00E.

Ackermann, Karl-Heinz: *See*—
Hoefer, Rainer; Schmid, Karl-Heinz; and Ackermann, Karl-Heinz, 4,623,695, Cl. 524-747.000.

Ackley, Donald E.; Engelmann, Reinhart W. H.; and Inouye, Teruko K., to Hewlett-Packard Company. Means and method for a self-aligned multilayer laser epitaxy structure device. 4,623,427, Cl. 156-647.000.

Adachi, Ryouhei: *See*—
Fujimori, Yoshitsugu; Adachi, Ryouhei; Ebisawa, Hiroo; Kikuchi, Nobuo; and Wada, Tsuneyuki, 4,623,190, Cl. 296-198.000.

Adamek, Stanislav: *See*—
Dudek, Josef; and Adamek, Stanislav, 4,622,750, Cl. 33-1.00H.

Adams, Thomas M., to Kaepa, Inc. Vamp assembly for an article of footwear. 4,622,763, Cl. 36-50.000.

ADC Telecommunications: *See*—
Gombrich, Peter P.; Uttermark, John A.; Schmid, Sidney L.; and Larson, Denis L., 4,623,418, Cl. 156-361.000.

Adcock, D L. Method and device for filtering lubricating oil for a dough divider machine. 4,623,455, Cl. 210-168.000.

Addison Machine Engineering Inc.: *See*—
Dempsey, William J.; Brunken, Walter R.; and Mailhiot, Alfred F., Jr., 4,622,729, Cl. 29-33.00A.

Adeka Argus Chemical Co., Ltd.: *See*—
Minagawa, Motonobu; Nakahara, Yutaka; Shibata, Toshihiro; and Arata, Ryozo, 4,623,685, Cl. 524-99.000.

Adler, Robert J.; Brown, William R.; Auyang, Lun; Liu, Yin-Chang; and Cook, W. Jeffrey, to CNG Research Company. Crystallization process. 4,623,372, Cl. 62-532.000.

Adler, Robert J., to Helipump, Inc. Process and apparatus for separating or fractionating fluid mixtures. 4,623,470, Cl. 210-787.000.

Advanced Micro Devices, Inc.: *See*—
Allen, Michael; and Hirsch, Lee, 4,623,990, Cl. 365-189.000.
Gwozdz, Peter S.; Schmidt, Christopher O.; and Price, William L., 4,622,738, Cl. 29-576.00B.
Thompson, Michael D.; and Mazumder, Nikhil C., 4,623,803, Cl. 307-475.000.

Advanced Plasma Systems Inc.: *See*—
Fazlin, Fazal A., 4,623,441, Cl. 204-298.000.

Aeci Limited: *See*—
Allen, Peter; and Hemmings, John W., 4,623,370, Cl. 62-11.000.

Agarwala, Poonam, to Empi, Inc. Programmable functional electrical stimulation system. 4,622,973, Cl. 128-421.000.

Agfa Gevaert Aktiengesellschaft: *See*—
Pertzsch, Albert; Brunner, Hubert; and Zeroni, Ludwig, 4,623,105, Cl. 242-198.000.

Agnew, Vincent R. Conveyor single filing system. 4,623,059, Cl. 198-452.000.

Ahler, Wilhelm: *See*—
Krone, Bernard; and Ahler, Wilhelm, 4,622,804, Cl. 56-13.900.

Aihara, Masaki; Tsuruta, Noboru; Kawai, Yoshito; and Sasaki, Hiroaki, to Kawasaki Steel Corporation. Apparatus for butt welding steel strips by using a laser beam in a steel strip-processing line. 4,623,777, Cl. 219-121.00L.

Ailman, LaVerne K.; Riggen, Danny E.; and Tarvin, Ronald L., to Cincinnati Milacron Inc. Machine control with motor velocity constraint. 4,623,971, Cl. 364-513.000.

Air-A-Plane Corporation: *See*—
Shepheard, Thomas E., 4,623,172, Cl. 285-309.000.

Air Dry Corporation of America: *See*—
Leighton, Francis; and Trebes, Fred W., 4,623,120, Cl. 251-223.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Ando, Masamoto; and Nagamori, Kiyonobu, 4,623,200, Cl. 303-22.00R.

Ajinomoto Co., Inc.: *See*—
Motegi, Kiyoshi; and Otani, Kichiro, 4,623,543, Cl. 426-103.000.

Ajiro, Yutaka: *See*—
Kakizaki, Katsumi; and Ajiro, Yutaka, 4,623,320, Cl. 446-462.000.

Akada, Yasuaki: *See*—
Taniguchi, Nobuyuki; Ishikawa, Norio; Akada, Yasuaki; Egawa, Takeshi; and Kawamura, Kunio, 4,623,238, Cl. 354-406.000.

Akae, Yoshifumi: *See*—
Hamano, Isao; Morishita, Akira; Akae, Yoshifumi; Nishimura, Youji; Tanaka, Toshinori; and Yabunaka, Kiyoshi, 4,622,930, Cl. 123-179.00K.

Akano, Shinichi, to Yamatake Honeywell. Receiving apparatus. 4,623,871, Cl. 340-310.00A.

Akashi, Teruo: *See*—
Ito, Hiroshi; Yamada, Shigemichi; and Akashi, Teruo, 4,622,866, Cl. 74-866.000.

Akita, Shigeyuki: *See*—
Tanaka, Hiroaki; and Akita, Shigeyuki, 4,623,889, Cl. 340-870.370.

Aktiebolaget Bygg-och Transportekonomi: *See*—
Kemmer, Claes, 4,623,032, Cl. 180-169.000.

Akzo N.V.: *See*—
de Wied, David, 4,623,640, Cl. 514-18.000.

Alberta Oil Sands Technology and Research Authority: *See*—
Ritter, Robert A., 4,623,203, Cl. 339-5.00P.
Ritter, Robert A., 4,623,442, Cl. 204-300.0EC.

Alcor, Inc.: *See*—
Portman, Joe L., Jr.; and Margraf, David J., 4,623,030, Cl. 177-210.0FP.

Alderman, Albert D., Jr.: *See*—
Knopp, Arthur A.; Lieb, Nathaniel H.; and Alderman, Albert D., Jr., 4,623,795, Cl. 250-504.00H.

Alexander, Jerry L.; Narayan, Sankar B.; Gerfast, Sten R.; and Nelson, Charles E., to Minnesota Mining and Manufacturing Company. Stable stretched surface recording medium. 4,623,570, Cl. 428-65.000.

Ali, Moinuddin H., to Amoco Corporation. Removal of brominated organics from acetic acid obtained by oxidation of liquid butane in presence of Co-Br or Co-Mn-Br system catalysis. 4,623,432, Cl. 203-98.000.

Allen, Gordon H. Locating elements of construction beneath the surface of earth soils. 4,623,282, Cl. 405-157.000.

Allen, Kenneth A. Drain plunger. 4,622,702, Cl. 4-255.000.

Allen, Michael; and Hirsch, Lee, to Advanced Micro Devices, Inc. Dual-port read/write RAM with single array. 4,623,990, Cl. 365-189.000.

Allen, Peter; and Hemmings, John W., to Aeci Limited. Gas treatment process. 4,623,370, Cl. 62-11.000.

Allen, Robert W.: *See*—
Elliot, James I.; Timbers, Gordon E.; Modler, H. Wayne; and Allen, Robert W., 4,623,541, Cl. 424-85.000.

Allied Corporation: *See*—
Bienkowski, Joseph V., 4,622,844, Cl. 73-1.00G.
Carp, Ralph W.; and Harvey, Mark C., 4,623,976, Cl. 364-571.000.
Harpell, Gary A.; Kavesh, Sheldon; Palley, Igor; and Prevorsek, Dusan C., 4,623,574, Cl. 428-113.000.
Hsiue, Eric S.; Zlatyk, Daniel; Stone, George R.; and DeBona, Bruce T., 4,623,577, Cl. 428-209.000.
Schrieber, Ricky J., 4,623,977, Cl. 364-577.000.

Allio, Roland; Del Fabbro, Gilbert; Debrabant, Francois; and Gillet, Francois, to Hotchiss-Brandt-Sogeme-H.B.S. Apparatus for the deflecting and stacking of letters and the like. 4,623,140, Cl. 271-305.000.

Aloka Co., Ltd.: *See*—
Namekawa, Kouroku; Koyano, Akira; and Kasai, Chihiro, 4,622,977, Cl. 128-663.000.

Alpegiani, Marco; Bedeschi, Angelo; Foglio, Maurizio; Franceschi, Giovanni; and Perrone, Ettore, to Farmitalia Carlo Erba S.p.A. Penem derivatives. 4,623,643, Cl. 514-196.000.

Alpha Group, Inc.: *See—*
Maurice, David M., 4,623,337, Cl. 604-298.000.

Alpine Electronics Inc.: *See—*
Kanari, Mitsuru, 4,623,110, Cl. 248-27.100.

Alps Electric Co., Ltd.: *See—*
Utagawa, Ikuo; and Ito, Kazuhiko, 4,623,766, Cl. 200-85.00R.
Yamamoto, Toshiyuki, 4,623,898, Cl. 346-76.0PH.
Yamashita, Tatsumaro, 4,623,944, Cl. 360-84.000.

Alternative Energy Resources: *See—*
Matzkanin, Randy L., 4,622,951, Cl. 126-450.000.

Aluminum Company of America: *See—*
Weyand, John D., 4,623,555, Cl. 427-34.000.

Alyakrinskaya, Aida I.: *See—*
Ivanov, Mikhail G.; Golov, Veniamin G.; Kuzmin, Vladimir N.; Alyakrinskaya, Aida I.; Mushy, Roman Y.; Kovalev, Alexei D.; Shutova, Nadezhda V.; Rodionov, Jury A.; Molev, Igor I.; Yakovleva, Ljudmila S.; Berezin, Vitaly B.; Petrashko, Alexei I.; Shuev, Gennady M.; Bukin, Boris A.; Belkina, Tamara M., deceased; and Belkin, Naum S., administrator, 4,623,731, Cl. 548-374.000.

Amana Refrigeration, Inc.: *See—*
Hays, Herbert G.; and Kuipers, Warren W., 4,622,947, Cl. 126-110.00R.

Amendt, Herman M. A.: *See—*
Verhoeven, Johannes M. G.; Smid, Albert; and Amendt, Herman M. A., 4,623,496, Cl. 264-1.700.

American Cord & Webbing Co., Inc.: *See—*
Krauss, Mark J., 4,622,723, Cl. 24-115.00G.

American Cyanamid Company: *See—*
Daniels, William A., 4,623,726, Cl. 546-168.000.
De Vries, Vern G., 4,623,662, Cl. 514-596.000.
Hirschbuehler, Kevin; and Kohli, Dalip K., 4,623,681, Cl. 523-468.000.
Kohli, Dalip K., 4,623,746, Cl. 560-50.000.
Rickelton, William A., 4,623,522, Cl. 423-22.000.
Speltz, Laurine M.; and Walworth, Bryant L., 4,623,376, Cl. 71-92.000.

American Hospital Supply Corporation: *See—*
Erhardt, Paul W.; and Matier, William L., 4,623,652, Cl. 514-326.000.

American Standard Inc.: *See—*
Darrow, John O. G., 4,623,850, Cl. 331-56.000.

Amin, Sanjay I.: *See—*
Walker, Jerry A.; and Amin, Sanjay I., 4,623,736, Cl. 549-369.000.

Amoco Corporation: *See—*
Ali, Moinuddin H., 4,623,432, Cl. 203-98.000.

AMP Incorporated: *See—*
Brown, Christopher K.; Kensinger, Lex D.; Klopp, Gregory S.; Long, Alden O., Jr.; Moyer, Carl L.; Over, William R.; and Walter, Herman D., 4,623,293, Cl. 414-126.000.
Feldman, Steven; and Yeager, Marvin L., 4,623,753, Cl. 174-50.000.
Grabbe, Dimitry; and Korsunsky, Iosif, 4,623,220, Cl. 350-96.200.
Tsukakoshi, Masao, 4,623,210, Cl. 339-91.00R.

Ampex Corporation: *See—*
Lundquist, Jerry R.; and Bertram, H. Neal, 4,623,867, Cl. 338-32.00R.

Anderberg, Bengt; and Eriksson, Mikael, to Instrument AB Scanditronix. Method and apparatus for storing an energy-rich electron beam in a race-track microtron. 4,623,847, Cl. 328-234.000.

Anderson, David W., to Eleanor Roosevelt Institute for Cancer Research, Inc. T-cell growth factor and method of making same. 4,623,622, Cl. 435-68.000.

Anderson, Eric W.: *See—*
Ford, Douglas L.; Kopp, Clinton V.; and Anderson, Eric W., 4,623,463, Cl. 210-500.290.

Anderson, Gerald R.: *See—*
Long, Dabbs C.; Anderson, Gerald R.; Linman, Dale L.; and Moore, Thomas M., 4,622,836, Cl. 72-31.000.

Anderson, Martin, to Shell Oil Company. Pesticidal benzoylurea compounds. 4,623,658, Cl. 514-482.000.

Anderson, Paul A.: *See—*
Weiler, Gerhard H.; Anderson, Paul A.; and Pagels, Louis T., 4,623,516, Cl. 422-28.000.

Anderson, Truman A.: *See—*
Vieau, Robert G.; Anderson, Truman A.; and Johansen, Kevin C., 4,622,781, Cl. 51-178.000.

Ando, Masamoto; and Nagamori, Kiyonobu, to Aisin Seiki Kabushiki Kaisha. Hydraulic pressure control valve responding to load. 4,623,200, Cl. 303-22.00R.

Ando, Yasunori: *See—*
Suzuki, Yasuo; and Ando, Yasunori, 4,622,919, Cl. 118-718.000.

Andres, Rudolf; Fussnegger, Wolfgang; Grantz, Helmut; and Heiss, Werner, to Daimler-Benz Aktiengesellschaft. Head restraint in a motor car. 4,623,166, Cl. 280-751.000.

Andrevski, Zygmunt M., to RCA Corporation. Method and apparatus for coating a selected area of the surface of an object. 4,623,608, Cl. 430-322.000.

Andrews, Donald R.; Kuseski, Roger E.; and Travis, Terence, to International Business Machines Corporation. Copy production machines. 4,623,244, Cl. 355-24.000.

Anestis, Emmanuel; and Wakefield, Frederick I., to Ex-Cell-O Corporation. Slush molding method with selective heating of mold by air jets. 4,623,503, Cl. 264-302.000.

Angliatech Limited: *See—*
Garretson, Oliver R.; and Watson, Gordon W., 4,623,839, Cl. 324-158.00P.

Anic S.p.A.: *See—*
Romano, Ugo; and Iori, Giuseppe, 4,623,705, Cl. 526-75.000.

Ansaldi, Anthony: *See—*
Winston, Anthony E.; Brown, Raymond; Usen, Norman; and Ansaldi, Anthony, 4,623,536, Cl. 424-49.000.

Ansite, William K., to Figgie International Inc. Self-contained portable single patient ventilator/resuscitator. 4,622,963, Cl. 128-203.270.

Antioch Publishing Company, The: *See—*
Sullivan, Stephen P., 4,622,767, Cl. 40-120.000.

Aoki, Hiroyuki, to Kabushiki Kaisha Toshiba. Print control apparatus having line buffer. 4,623,978, Cl. 364-519.000.

Aoki, Seiji; and Yanagisawa, Gennai, to Taiyo Shokai Co., Ltd. Method and an apparatus for sealing a nose of a packaging flat tube band after opening the nose. 4,622,801, Cl. 53-429.000.

Aomori, Koukichi, to Kabushiki Kaisha Toshiba. Robot hand. 4,623,183, Cl. 294-86.400.

Aoyagi, Yoshio: *See—*
Kurosaki, Masanori; Aoyagi, Yoshio; Ueki, Yoshiharu; Kaneko, Yukihiro; Motohashi, Minoru; Sakaguchi, Shozaburo; and Sawaki, Manabu, 4,623,992, Cl. 369-6.000.

Apostolos, John A., to State of California, Department of Transportation. Safety retainer for a wheelchair. 4,623,289, Cl. 410-7.000.

Appelson, Jay M. Guide for decorative grass cutting. 4,622,746, Cl. 30-286.000.

Apple Adhesives, Inc.: *See—*
Hough, William C., Jr., 4,623,102, Cl. 248-68.100.

Application Engineering Corporation: *See—*
Waters, Michael A., 4,623,497, Cl. 264-40.600.

Arai, Kenji; and Kurihara, Kazumasa, to Diesel Kiki Co., Ltd. Thermosensitive switching circuit having comparator with open collector output. 4,623,798, Cl. 307-117.000.

Arai, Shokichi: *See—*
Matsubayashi, Shinji; Kajikawa, Tsuneo; and Arai, Shokichi, 4,623,167, Cl. 280-798.000.

Arakawa, Satoshi; Toyota, Makoto; and Takeshita, Fumitaka, to Fuji Photo Optical Co., Ltd. Endoscope having a plate-like image sensor for forming images. 4,622,954, Cl. 128-6.000.

Arata, Ryozo: *See—*
Minagawa, Motonobu; Nakahara, Yutaka; Shibata, Toshihiro; and Arata, Ryozo, 4,623,685, Cl. 524-99.000.

Aritake, Masanori: *See—*
Sugita, Hiroshi; Yasukawa, Takemasa; and Aritake, Masanori, 4,622,712, Cl. 15-250.360.

Armco, Inc.: *See—*
Jamison, Warren E.; Stull, Dean P.; and Guzzetta, Franklin H., 4,623,472, Cl. 252-12.200.

Arndt, Norbert; and Schneider, Udo, to General Motors Corporation. Heating and cooling system for a motor vehicle. 4,623,092, Cl. 237-12.30C.

Arndt, William C., to Marley-Wylain Company, The. Combination discharge and supply fitting for hot water tank. 4,623,093, Cl. 237-19.000.

Arnold, Mark G. Method and apparatus for increasing the number of characters per line in a digitally generated display on a limited bandwidth raster scanned device. 4,623,881, Cl. 340-750.000.

Arora, Om P.; and Brady, James H., to United States of America, Navy. Liquid metal brush material for electrical machinery systems. 4,623,514, Cl. 420-555.000.

Asada, Eiji: *See—*
Futamura, Kenichiro; Asada, Eiji; and Fukuoka, Tatsuhiko, 4,623,595, Cl. 428-553.000.

Asada, Haruo: *See—*
Watanabe, Sadakazu; Shinoda, Hidenori; Nitta, Tsuneo; Takebayashi, Yoichi; Hirai, Shouichi; Sakata, Tomio; Uehara, Kensuke; Takahashi, Yasuo; and Asada, Haruo, 4,624,011, Cl. 381-43.000.

Asahi Glass Company Ltd.: *See—*
Oda, Noriyuki; Kido, Nobuyuki; and Muramatsu, Keiji, 4,623,017, Cl. 165-82.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Kanuma, Tadao, 4,623,011, Cl. 152-451.000.
Kikuzawa, Kenji; and Otaki, Yukio, 4,623,290, Cl. 411-350.000.
Mutoh, Yoshihiko; and Miura, Morikazu, 4,623,670, Cl. 521-61.000.

Asano, Junichi; Ishii, Hiroyuki; and Kosugiyama, Otoya, to Canon Kabushiki Kaisha. Original image processing apparatus with improved cover. 4,623,938, Cl. 358-285.000.

Ashe, Bonnie M.: *See—*
Doherty, James B.; Ashe, Bonnie M.; Finke, Paul E.; Firestone, Raymond A.; Shah, Shrenik K.; and Zimmerman, Morris, 4,623,645, Cl. 514-200.000.

Ashland Oil, Inc.: *See—*
Goel, Anil B., 4,623,744, Cl. 558-170.000.

Ashland Products Company: *See—*
Simpson, Harold, 4,622,778, Cl. 49-161.000.

ASTA-Werke Aktiengesellschaft Chemische Fabrik: *See—*
Scheffler, Gerhard; Niemeyer, Ulf; Brock, Norbert; and Pohl, Jorg, 4,623,742, Cl. 558-81.000.

AT&T Bell Laboratories: *See—*
Binkerd, Mark S.; and Sand, William C., 4,623,760, Cl. 379-232.000.
Chang, Chuan C.; Kahng, Dawon; Kamgar, Avid; and Parrillo, Louis C., 4,623,912, Cl. 357-54.000.
Eng, Wing K., 4,623,960. Cl. 363-21.000.
Feather, Mitchell D., 4,623,257, Cl. 356-401.000.
Rodwell, Mark J. W., 4,623,786, Cl. 250-214.00A.

Stone, Julian, 4,623,373, Cl. 65-2.000.
Waring, David L., 4,623,888, Cl. 340-826.000.
AT&T Technologies, Inc.: *See*—
Loesch, Robert P., 4,623,129, Cl. 266-104.000.
Atelier de Rectification et d'Affutage A.R.A.F.: *See*—
Costil, Marcel, 4,623,285, Cl. 407-41.000.
Ateliers de Constructions Electriques de Charleroi: *See*—
Fabris, Mirko, 4,623,509, Cl. 376-268.000.
Atlantic Richfield Company: *See*—
Lewis, Steven C.; Love, Robert B.; Miller, Stephen C.; Shing, Yuh-han; Sibert, John W.; Tanner, David P.; and Tran, Nang T., 4,623,601, Cl. 430-69.000.
Aubert, Jean-Jacques; Bechevet, Bernard; and Daval, Jacques, to Commissariat a l'Energie Atomique. Process for producing a strain-free monocrystal of a crystalline ferroelectric compound. 4,623,423, Cl. 156-603.000.
Auclair, William T. Universal ground clamp. 4,623,204, Cl. 339-14.00L.
Autery, Dave: *See*—
Spencer, John E.; Carter, Duane; and Autery, Dave, 4,623,417, Cl. 156-345.000.
Automatic Liquid Packaging, Inc.: *See*—
Weiler, Gerhard H.; Anderson, Paul A.; and Pagels, Louis T., 4,623,516, Cl. 422-28.000.
Automobiles Citroen: *See*—
Le Creurer, Maurice; and Behar, Joseph, 4,622,941, Cl. 123-432.000.
Automobiles Peugeot: *See*—
Le Creurer, Maurice; and Behar, Joseph, 4,622,941, Cl. 123-432.000.
Automotive Products plc: *See*—
Barnett, John R.; and Hales, Eric C., 4,623,046, Cl. 188-79.5GT.
Autotran Swather Limited: *See*—
Bahnman, Reuben; and Dietz, Frank J., 4,622,806, Cl. 56-16.200.
Auyang, Lun: *See*—
Adler, Robert J.; Brown, William R.; Auyang, Lun; Liu, Yin-Chang; and Cook, W. Jeffrey, 4,623,372, Cl. 62-532.000.
Avella, Frank S., to Plan Hold Corporation. Position retaining device for draftsman chair. 4,623,195, Cl. 297-437.000.
Ayers, William R., to Central Illinois Manufacturing Co. Method of making water removing filter media. 4,623,560, Cl. 427-184.000.
Azarnia, Farah D.; and Elmore, Jimmy D., to Celanese Corporation. Aqueous epoxy resin dispersions for can coating use. 4,623,680, Cl. 523-412.000.
Aziz, Edward M.; and Gulow, Robert. Structural connection for cavity wall construction. 4,622,796, Cl. 52-747.000.
Azuma, Tomoki: *See*—
Nakanishi, Toshihide; Azuma, Tomoki; Hirao, Toshihiko; Hattori, Kiyoji; and Sakurai, Minoru, 4,623,623, Cl. 435-115.000.
Baba, Masao: *See*—
Kita, Yuichi; Sakamoto, Kentaro; Baba, Masao; and Okubo, Atsushi, 4,623,734, Cl. 548-545.000.
Babauer, Boyd R.: *See*—
Bambauer, Boyd R.; Dunkle, Donald H.; and Loscutoff, Steve, 4,623,029, Cl. 177-137.000.
Babcock & Wilcox Company, The: *See*—
Mizerak, Dennis S., 4,622,858, Cl. 73-861.380.
Murphy, Melvin E.; and Gohara, Wadie F., 4,622,904, Cl. 110-263.000.
Babilas, John. Automatic wheel chair brake. 4,623,043, Cl. 188-2.00F.
Bachrach, Benjamin I.; Fuhrman, William J.; Hall, Daniel W.; and Hauser, Gotz S., to Ford Motor Company. Die for extruding toothed helical members. 4,622,842, Cl. 72-467.000.
Back, Gerhard; and Mosimann, Walter, to Ciba-Geigy Corporation. Process for dyeing natural or synthetic polyamide fibre materials with 1:1 metal complex dyes and fluoride, fluorosilicate or fluoroborate. 4,623,358, Cl. 8-620.000.
Bahnman, Reuben; and Dietz, Frank J., to Autotran Swather Limited. Ditch swather. 4,622,806, Cl. 56-16.200.
Baier, Kathleen G.: *See*—
Nayar, Bala C.; Baier, Kathleen G.; O'Brien, David A.; and Sawicki, Edward M., 4,623,476, Cl. 252-94.000.
Baier, Robert E.; and Kent, Keith, to Kent, Keith. Self-adhesive polymer composition for use as prosthetic appliance. 4,623,593, Cl. 428-447.000.
Bailey, Frederick E., Jr., to Union Carbide Corporation. Polymer/-polyols of substituted styrenes and polyurethanes made therefrom. 4,623,674, Cl. 521-137.000.
Bajusz nee Olah, Judit: *See*—
Grega nee Toth, Erzsebet; Nagy, Jozsef; Tarpai, Gyula; Lorik, Erno ; Toth, Istvan; Pasztor, Karoly; Bartfai nee Harsanyi, Zsuzsanna; Beres, Ilona; Tasi, Laszlo ; Urszin nee Simon, Eszter; Dombay, Zsolt; Bajusz nee Olah, Judit; and Balogh, Karoly, 4,623,383, Cl. 71-100.000.
Baker, Keith F.; Kowalski, Richard M.; and Mishler, Ralph E., to Synchro-Start Products, Inc. Latching solenoid mechanism. 4,623,860, Cl. 335-170.000.
Bakker, Martin; and Van Laarhoven, Johannes A. H., to Oce-Nederland B.V. Magnetically attractable color toner powder. 4,623,602, Cl. 430-106.000.
Balkin, Michael L. Fibreboard container for coil material. 4,623,063, Cl. 206-408.000.
Ball Corporation: *See*—
Doud, Wilbur O.; Davis, Robert E.; and Sawyer, Fred R., 4,623,374, Cl. 65-83.000.
Balogh, Karoly: *See*—
Grega nee Toth, Erzsebet; Nagy, Jozsef; Tarpai, Gyula; Lorik, Erno ; Toth, Istvan; Pasztor, Karoly; Bartfai nee Harsanyi, Zsuzsanna; Beres, Ilona; Tasi, Laszlo ; Urszin nee Simon, Eszter; Dombay, Zsolt; Bajusz nee Olah, Judit; and Balogh, Karoly, 4,623,383, Cl. 71-100.000.
Bambauer, Boyd R.; Dunkle, Donald H.; and Loscutoff, Steve, to Oceanside Electronics; and Babauer, Boyd R. Weighing system for vehicles with temperature and inclinometer correction. 4,623,029, Cl. 177-137.000.
Bannai, Eisuke: *See*—
Uchida, Kenji; and Bannai, Eisuke, 4,623,424, Cl. 156-610.000.
Bantjes, Adriaan: *See*—
Maaskant, Nico; Bantjes, Adriaan; and Kempen, Hermanus J. M., 4,623,628, Cl. 436-13.000.
Baratto, Mirko; and Leonardi, Alfio, to Nordica S.p.A. Structure of a device for varying the inclination in ski boots. 4,622,765, Cl. 36-120.000.
Barber, James C., to James C. Barber and Associates, Inc. Recovery of fluorine from waste gases. 4,623,528, Cl. 423-320.000.
Barberi, Paul; Bergez, Pierre; Brun, Maurice; Chevalier, Michel; Eyraud, Charles; and Quinson, Jean-Francois, to Commissariat a l'Energie Atomique; and Centre Nationale de la Recherche Scientifique. Apparatus for the thermal measurement of the texture of a porous body. 4,623,263, Cl. 374-33.000.
Barksdale, John S., to Ford Motor Company. Dual reversed cone synchronizing clutch. 4,623,054, Cl. 192-53.00E.
Barnett, John R.; and Hales, Eric C., to Automotive Products plc. Automatic adjuster for duo-servo internal shoe drum brakes. 4,623,046, Cl. 188-79.5GT.
Barr, Tery L.: *See*—
Lambert, Susan L.; Johnson, Russell W.; Lawson, Randy J.; and Barr, Tery L., 4,623,632, Cl. 502-74.000.
Barron, Earl L. Bonding flange adapter. 4,623,205, Cl. 339-14.00L.
Bartch, Donald W.: *See*—
Deal, Samuel B.; and Bartch, Donald W., 4,623,820, Cl. 313-466.000.
Bartel, Mark H.: *See*—
Wayne, Alex; Bintner, Dennis W.; and Bartel, Mark H., 4,623,277, Cl. 403-314.000.
Bartfai nee Harsanyi, Zsuzsanna: *See*—
Grega nee Toth, Erzsebet; Nagy, Jozsef; Tarpai, Gyula; Lorik, Erno ; Toth, Istvan; Pasztor, Karoly; Bartfai nee Harsanyi, Zsuzsanna; Beres, Ilona; Tasi, Laszlo ; Urszin nee Simon, Eszter; Dombay, Zsolt; Bajusz nee Olah, Judit; and Balogh, Karoly, 4,623,383, Cl. 71-100.000.
Barth, Peter, to Lohmann GmbH & Co KG. Drying apparatus for sheets of material. 4,622,761, Cl. 34-86.000.
Barudan Co., Ltd.: *See*—
Kimura, Jiro, 4,622,907, Cl. 112-121.120.
BASF Aktiengesellschaft: *See*—
Broecker, Franz J.; Gettert, Hans; and Kaempfer, Knut, 4,623,533, Cl. 423-573.00G.
Broecker, Franz J.; Duembgen, Gerd; Pies, Wolfgang; Schlichtharle, Gottfried; and Weber, Guenter, 4,623,668, Cl. 518-709.000.
Brunnmueller, Fritz; Kroner, Michael; Hartmann, Heinrich; Linhart, Friedrich; and Pfitzner, Klaus, 4,623,699, Cl. 525-355.000.
Dorow, Joachim; and Bleckmann, Gerhard, 4,622,895, Cl. 101-153.000.
Gimpel, Juergen; Gulbins, Erich; and Ley, Gregor, 4,623,679, Cl. 523-410.000.
Jahn, Dieter; Becker, Rainer; Goetz, Norbert; Keil, Michael; and Wuerzer, Bruno, 4,623,381, Cl. 71-94.000.
Kraus, Gerold; Huber, Walter; Hack, Joachim; Schulze-Berge, Klaus; and Sold, Roland, 4,623,942, Cl. 360-75.000.
Schultze, Hans, 4,623,624, Cl. 435-186.000.
Batla, Masroor A.; and Hanscom, Bradford E., to Fortel, Inc. Hybrid system for recording voice and data signals. 4,623,758, Cl. 379-80.000.
Battelle-Institut e.V.: *See*—
Gurs, Karl, 4,624,001, Cl. 372-90.000.
Battelle Memorial Institute: *See*—
Giddey, Claude; and Dove , Georges, 4,623,551, Cl. 426-564.000.
Bauer, Adolf: *See*—
Maeke, Siegfried; Bauer, Adolf; Vogt, Hubert; and Wolf, Helmut, 4,623,730, Cl. 548-308.000.
Bauer, Bernhard: *See*—
Olschewski, Armin; Bauer, Bernhard; Leuner, Hilmar; and Dobhan, Herbert, 4,623,270, Cl. 384-576.000.
Bauer, Klaus: *See*—
Schmierer, Roland; Handte, Reinhard; Mildenberger, Hilmar; Bauer, Klaus; Bieringer, Hermann; and Burstell, Helmut, 4,623,380, Cl. 71-92.000.
Bauer, Ralph: *See*—
Cottringer, Thomas E.; van de Merwe, Ronald H.; and Bauer, Ralph, 4,623,364, Cl. 51-309.000.
Baum, Jonathan S.; and Chen, Tsong M., to FMC Corporation. Plant growth and development modification using 2-(2-oxycarbonylphenyl)benzimidazole derivatives. 4,623,379, Cl. 71-92.000.
Baumgart, Frank: *See*—
Ries, Peter; Baumgart, Frank; and Mittelmeier, Heinz, 4,623,553, Cl. 427-2.000.
Bauriedel, Hans, to Henkel Kommanditgesellschaft auf Aktien. Adhesives based on polyurethane prepolymers having a low residual monomer content. 4,623,709, Cl. 528-65.000.
Baxter-Travenol Laboratories, Inc.: *See*—
Raible, Donald A., 4,623,518, Cl. 422-46.000.
White, Leonard A., 4,623,069, Cl. 215-11.00R.

Bayer Aktiengesellschaft: *See—*
Brandes, Wilhelm; Hanssler, Gerd; Reinecke, Paul; Scheinpflug, Hans; and Holmwood, Graham, 4,623,653, Cl. 514-383.000.
Gayer, Herbert; Reinecke, Paul; Brandes, Wilhelm; and Hanssler, Gerd, 4,623,655, Cl. 514-399.000.
Henning, Wolfgang; Hombach, Rudolf; Meckel, Walter; and Reiff, Helmut, 4,623,416, Cl. 156-331.700.
Hurnik, Helmut; Grogler, Gerhard; Hess, Heinrich; and Kopp, Richard, 4,623,686, Cl. 524-101.000.
Kleinstuck, Roland; and Wiedermann, Rolf, 4,623,672, Cl. 521-108.000.
Niese, Manfred, 4,623,968, Cl. 364-500.000.
von Bittera, Miklos; Dhein, Rolf; Meyer, Rolf-Volker; and Rupp, Roland, 4,623,346, Cl. 604-...6.000

Bayerische Motoren Werke AG: *See—*
Distel, Robert; Groner, Hans; and Kugland, Peter, 4,622,811, Cl. 60-303.000.

Bayerische Motoren Werke Aktiengesellschaft: *See—*
Konig, Dieter; Schickhaus, Heinz; and Muller, Johann, 4,622,783, Cl. 51-376.000.

Bazargan, Kaveh, to Satori Limited. Holograms. 4,623,214, Cl. 350-3.770.

Bazargan, Kaveh, to Satori Limited. Holograms. 4,623,215, Cl. 350-3.850.

BBC Brown, Boveri & Company, Limited: *See—*
Peneder, Franz; and Suchanek, Vojen, 4,623,830, Cl. 318-798.000.

Beal, Graham K.: *See—*
Davis, Geoffrey; and Beal, Graham K., 4,623,133, Cl. 267-53.000.

Beale, William T.; and Scheck, Christopher G., to Sunpower, Inc. Electromechanical transducer particularly suitable for a linear alternator driven by a free-piston Stirling engine. 4,623,808, Cl. 310-15.000.

Beam, Paul E., Jr., to General Motors Corporation. Turbine rotor for gas turbine engine. 4,623,297, Cl. 415-118.000.

Beard, Robert W., to Abbott Laboratories. Surgical cutting device. 4,622,966, Cl. 128-303.140.

Bechevet, Bernard: *See—*
Aubert, Jean-Jacques; Bechevet, Bernard; and Daval, Jacques, 4,623,423, Cl. 156-603.000.

Bechtel International Corporation: *See—*
Abrams, Jack Z.; and Sherwin, Robert M., 4,623,523, Cl. 423-242.000.

Becker, Rainer: *See—*
Jahn, Dieter; Becker, Rainer; Goetz, Norbert; Keil, Michael; and Wuerzer, Bruno, 4,623,381, Cl. 71-94.000.

Beckwith, Elaine C.; and Ezis, Andre, to Ceradyne Advanced Products, Inc. Method of improving quality of hot pressed Si_3N_4 bodies. 4,623,498, Cl. 264-65.000.

Bedell, Stephen A.; Coleman, William M., III; and Howell, William R., Jr., to Dow Chemical Company, The. Polymerization of olefins in the presence of polymer supported Ziegler-Natta catalysts. 4,623,707, Cl. 526-142.000.

Bedeschi, Angelo: *See—*
Alpegiani, Marco; Bedeschi, Angelo; Foglio, Maurizio; Franceschi, Giovanni; and Perrone, Ettore, 4,623,643, Cl. 514-196.000.

Behar, Joseph: *See—*
Le Creurer, Maurice; and Behar, Joseph, 4,622,941, Cl. 123-432.000.

Beigler, Myron A.: *See—*
Danby, Hal C.; and Beigler, Myron A., 4,622,975, Cl. 128-642.000.

Beinor, Robert T.; and Cole, William M., to Firestone Tire & Rubber Co., The. Solvent fractionation of guayule rubber. 4,623,713, Cl. 528-930.000.

Beitner, Shlomo. Peltier thermoelectric element mounting. 4,622,822, Cl. 62-3.000.

Belkin, Naum S., administrator: *See—*
Ivanov, Mikhail G.; Golov, Veniamin G.; Kuzmin, Vladimir N.; Alyakrinskaya, Aida I.; Mushy, Roman Y.; Kovalev, Alexei D.; Shutova, Nadezhda V.; Rodionov, Jury A.; Molev, Igor I.; Yakovleva, Ljudmila S.; Berezin, Vitaly B.; Petrashko, Alexei I.; Shuev, Gennady M.; Bukin, Boris A.; Belkina, Tamara M., deceased; and Belkin, Naum S., administrator, 4,623,731, Cl. 548-374.000.

Belkina, Tamara M., deceased: *See—*
Ivanov, Mikhail G.; Golov, Veniamin G.; Kuzmin, Vladimir N.; Alyakrinskaya, Aida I.; Mushy, Roman Y.; Kovalev, Alexei D.; Shutova, Nadezhda V.; Rodionov, Jury A.; Molev, Igor I.; Yakovleva, Ljudmila S.; Berezin, Vitaly B.; Petrashko, Alexei I.; Shuev, Gennady M.; Bukin, Boris A.; Belkina, Tamara M., deceased; and Belkin, Naum S., administrator, 4,623,731, Cl. 548-374.000.

Bell Helmets Inc.: *See—*
Sundahl, James G., 4,622,700, Cl. 2-425.000.

Bell, Malcolm E.; McFee, John E.; Morewood, Henry W.; and Coffey, Clayton G., to Canada, Her Majesty the Queen in right of. Magnetometer array with magnetic field sensors on elongate support. 4,623,842, Cl. 324-245.000.

Belli, Cheryl E.: *See—*
Donley, Harold E.; and Belli, Cheryl E., 4,623,389, Cl. 106-1.140.

Benaroya, Henry; Le Foll, Jean; and Cadoux, Jean-Elie. Apparatus for selectively taking up a layer of polhutant from the surface of a body of water. 4,623,459, Cl. 210-242.300.

Benjamin, Kenneth A.; and Brouwer, Charles W., to John Brown Inc. Stall protection circuit for brushless motor control. 4,623,826, Cl. 318-254.000.

Benner, Stephen J.: *See—*
Pejouhy, Radi; Benner, Stephen J.; and Loring, Joshua, 4,622,739, Cl. 29-622.000.

Benson, Richard E.: *See—*
Johnson, Orlin W.; Larson, Michael P.; Benson, Richard E.; Kerber, Dathan R.; and Cross, Jon R., 4,622,805, Cl. 56-14.300.

Bensons International Systems, Limited: *See—*
Kinneir, Ross, 4,623,276, Cl. 402-80.00R.

Bensoussan, David; and Tardio, Don. Electronic temperature controller for householding. 4,623,969, Cl. 364-505.000.

Bentham, Jeremy B., to Shell Oil Company. Gas/liquid contacting apparatus. 4,623,493, Cl. 261-109.000.

Beres, Ilona: *See—*
Grega nee Toth, Erzsebet; Nagy, Jozsef; Tarpai, Gyula; Lorik, Erno ; Toth, Istvan; Pasztor, Karoly; Bartfai nee Harsanyi, Zsuzsanna; Beres, Ilona; Tasi, Laszlo ; Urszin nee Simon, Eszter; Dombay, Zsolt; Bajusz nee Olah, Judit; and Balogh, Karoly, 4,623,383, Cl. 71-100.000.

Berezin, Vitaly B.: *See—*
Ivanov, Mikhail G.; Golov, Veniamin G.; Kuzmin, Vladimir N.; Alyakrinskaya, Aida I.; Mushy, Roman Y.; Kovalev, Alexei D.; Shutova, Nadezhda V.; Rodionov, Jury A.; Molev, Igor I.; Yakovleva, Ljudmila S.; Berezin, Vitaly B.; Petrashko, Alexei I.; Shuev, Gennady M.; Bukin, Boris A.; Belkina, Tamara M., deceased; and Belkin, Naum S., administrator, 4,623,731, Cl. 548-374.000.

Berfield, Robert C.; Wacek, Rudolph W.; and Seasholtz, Craig, to Shop-Vac Corporation. Grid element for lid of a cannister type vacuum cleaner. 4,623,366, Cl. 55-216.000.

Berg, John W. Precision electromechanical measuring device. 4,622,751, Cl. 33-169.00C.

Bergez, Pierre: *See—*
Barberi, Paul; Bergez, Pierre; Brun, Maurice; Chevalier, Michel; Eyraud, Charles; and Quinson, Jean-Francois, 4,623,263, Cl. 374-33.000.

Bergman, Brian A., to Gardner Bender, Inc. Tube bender with spirit level indicator. 4,622,837, Cl. 72-34.000.

Bergman, Werner, to United States of America, Energy. Recirculating electric air filter. 4,623,365, Cl. 55-131.000.

Bernard, Jean-Pierre: *See—*
Magoni, Pascal; Bernard, Jean-Pierre; and De Guglielmo, Pascal, 4,622,893, Cl. 100-2.000.

Bernath, Gabor; Kobor, Jeno ; Folop, Ferenc; Sohar, Pal; Perjesi, Pal; Ezer, Elemer; Hajos, Gyorgy; Palosi, Eva; Denes, Laszlo ; and Szporny, Laszlo , to Richter Gedeon Vegyeszeti Gyar R.T. [1,3]oxazino[4,3-a]-isoquinoline derivatives and pharmaceutical compositions containing them. 4,623,647, Cl. 514-228.000.

Bernheim, Michael; Meindl, Hubert; Rohringer, Peter; Wegmuller, Hans; and Werthemann, Dieter, to Ciba-Geigy Corporation. Process for sizing paper with anionic hydrophobic sizing agents and cationic retention aids. 4,623,428, Cl. 162-158.000.

Bernstein, Samuel; and Ushimaru, Kenji, to Energy International, Inc. Cogeneration microwave food dryer. 4,622,757, Cl. 34-1.000.

Bertram, H. Neal: *See—*
Lundquist, Jerry R.; and Bertram, H. Neal, 4,623,867, Cl. 338-32.00R.

Betts, Daniel L., to Champion Building Systems, Inc. Modular deck structure and method for constructing same. 4,622,792, Cl. 52-263.000.

Bexten, Ludger; Cornils, Boy; and Kupies, Dieter, to Ruhrchemie Aktiengesellschaft. Process for the purification of sulfonated aryl phosphines. 4,623,490, Cl. 260-505.00P.

BF Goodrich Company, The: *See—*
Urig, Elmer R.; and Park, James E., 4,623,462, Cl. 210-496.000.

Bhatia, Swarnjeet S.: *See—*
Japka, Joseph E.; Staffin, Robert; and Bhatia, Swarnjeet S., 4,623,400, Cl. 148-6.350.

Bickley, Robert H.; and Murray, Steven A., to Motorola, Inc. Incrementally tuned RF filter having pin diode switched lines. 4,623,856, Cl. 333-205.000.

Bieger, Walter I.: *See—*
Glemming, Marvin R.; and Bieger, Walter I., 4,622,880, Cl. 84-317.000.

Bielomatik Leuze GmbH: *See—*
Buck, Hermann, 4,623,291, Cl. 414-31.000.

Bienkowski, Joseph V., to Allied Corporation. Oxygen sensor monitor. 4,622,844, Cl. 73-1.00G.

Bierbauer, Franz-Josef: *See—*
Krieg, Rudolf; Ziegler, Friedrich; and Bierbauer, Franz-Josef, 4,623,815, Cl. 313-113.000.

Bieringer, Hermann: *See—*
Schmierer, Roland; Handte, Reinhard; Mildenberger, Hilmar; Bauer, Klaus; Bieringer, Hermann; and Burstell, Helmut, 4,623,380, Cl. 71-92.000.

Biernacki, Andreas: *See—*
Denner, Wolf J.; Biernacki, Andreas; and Breitschwerdt, Gunter, 4,622,888, Cl. 98-115.300.

Binder, Josef; Cutter, David; Henning, Wolfgang; Schaber, Hans-Christian; Mollmer, Frank; and Reichert, Hansjorg, to Siemens Aktiengesellschaft. Sensor with polycrystalline silicon resistors. 4,622,856, Cl. 73-727.000.

Binder, Werner; Gresser, Gerhard; and Dettelbach, Alfred, to REICH Spezialmaschinen GmbH. Guide roller for band saws. 4,622,748, Cl. 30-380.000.

Binkerd, Mark S.; and Sand, William C., to AT&T Bell Laboratories. Signaling protocol interface channel unit. 4,623,760, Cl. 379-232.000.

Bintner, Dennis W.: *See*—
Wayne, Alex; Bintner, Dennis W.; and Bartel, Mark H., 4,623,277, Cl. 403-314.000.

Biolik, Felicjan J.; and Morys, Zygmunt A., to Biuro Projektow Przemyslu Metali Niezelaznych BIPROMET. Method of anti-corrosive protection of silicon carbide products. 4,623,517, Cl. 422-40.000.

Biotek, Inc.: *See*—
Nuwayser, Elie S.; and Nucefora, William A., 4,623,588, Cl. 428-402.240.

BIP Chemicals Limited: *See*—
Taylor, David; and Griffiths, Janet P., 4,623,691, Cl. 524-542.000.

Birkner, Joseph R.: *See*—
Hurley, James R.; Birkner, Joseph R.; and Nunes, Maurice, 4,622,946, Cl. 126-39.00E.

Bischoff, Gilbert; Muller, Reiner; and Gath, Dietmar, to ITT Industries, Inc. Valve device for vacuum brake boosters. 4,622,882, Cl. 91-369.00R.

Bisson, Donald K.; and Fritzsche, Harold L., to General Electric Company. Apparatus and method for continuously forming edgewise wound cores. 4,622,835, Cl. 72-16.000.

Biuro Projektow Przemyslu Metali Niezelaznych BIPROMET: *See*—
Biolik, Felicjan J.; and Morys, Zygmunt A., 4,623,517, Cl. 422-40.000.

BKS Company: *See*—
Cassel, Thomas R.; and Cassel, Scott T., 4,623,164, Cl. 280-689.000.

Black, David A.; and Deans, John J. F. Pressurized waterstops. 4,622,784, Cl. 52-2.000.

Black & Decker Inc.: *See*—
Smith, Peter B., 4,623,810, Cl. 310-90.000.

Bladh, Eric A.; and Lindholm, Lars Åke A., to Telefonaktiebolaget LM Ericsson. Method and arrangement for distribution of send permission to terminals in a telecommunication network. 4,623,885, Cl. 340-825.005.

Blair, Gordon P., to Queen's University of Belfast, The. Deflector piston two-stroke engine. 4,622,929, Cl. 123-65.00A.

Blake, Terence G., to Texas Instruments Incorporated. Memory with p-channel cell access transistors. 4,623,989, Cl. 365-156.000.

Blanco, Ernesto: *See*—
Thompson, Randall, Jr.; and Blanco, Ernesto, 4,622,812, Cl. 60-398.000.

Bleckmann, Gerhard: *See*—
Dorow, Joachim; and Bleckmann, Gerhard, 4,622,895, Cl. 101-153.000.

Bleke, Jim. Draft reduction system for ships. 4,622,912, Cl. 114-123.000.

Blixt, Lars-Goran F.: *See*—
Paulsson, Jan-Erik H.; and Blixt, Lars-Goran F., 4,622,788, Cl. 52-79.110.

Blixt, Lars-Goran Franklin: *See*—
Paulsson, Jan-Erik H.; and Blixt, Lars-Goran F., 4,622,788, Cl. 52-79.110.

Block, Ambrose F. Animal trap. 4,622,774, Cl. 43-88.000.

Bloom, Terry R.: *See*—
Kuo, Charles C. Y.; and Bloom, Terry R., 4,623,482, Cl. 252-512.000.

Blume, Harald; and Wagner, Bodo, to Wegmann & Co. GMBH. Rotating and positioning tool for axially symmetrical workpieces, especially steering tie rods in motor vehicles. 4,623,191, Cl. 279-110.000.

Bodson, Charles D.: *See*—
Urban, Stephen J.; and Bodson, Charles D., 4,623,936, Cl. 358-284.000.

Boeckmann, Eduard F. B.; and James, Miranda L., to GTE Communication Systems Corporation. Static discharge snubber circuit for silicon controlled rectifier (SCR) type telephone hold devices. 4,623,762, Cl. 379-393.000.

Boehringer Ingelheim KG: *See*—
Casals-Stenzel, Jorge; Weber, Karl-Heinz; Walther, Gerhard; Harreus, Albrecht; and Muacevic, Gojko, 4,623,646, Cl. 514-220.000.

Boeing Company, The: *See*—
Warren, Steven M., 4,623,049, Cl. 188-281.000.
Williams, John W., 4,622,913, Cl. 114-280.000.

Bohme, Reinhard D.; and Overholt, Steven D., to Champion International Corporation. Resin impregnated board. 4,623,412, Cl. 156-210.000.

Bohme, Rolf C.; and Lazerson, Max M., to General Mining Union Corporation Limited. Core logging. 4,623,792, Cl. 250-255.000.

Bohmert, Reiner: *See*—
Patzschke, Hans-Peter; Gobel, Armin; and Bohmert, Reiner, 4,623,690, Cl. 524-538.000.

Bohnensieker, Franz. Apparatus for the separation of the reusable part from the unusable part of granular form filter material, in particular of granular form activated charcoal, from filter equipment. 4,623,449, Cl. 209-250.000.

Bok, Edward, to Integrated Automation Limited. Module for high vacuum processing. 4,622,918, Cl. 118-718.000.

Bolger, Thomas V., to RCA Corporation. Apparatus for processing multiple time division multiplexed asynchronous composite video signals. 4,623,915, Cl. 358-22.000.

Bollinger, Rudolf, to Hollymatic AG. Ingenbohl. Portioning machine to fill molds with plastic food material and use of same. 4,622,717, Cl. 17-32.000.

Borden, Inc.: *See*—
Boston, Louis R., 4,622,799, Cl. 53-415.000.

Borovinskaya, Inna P.: *See*—
Maximov, Jury M.; Ziatdinov, Mansur K.; Kolmakov, Anatoly D.; Raskolenko, Larisa G.; Merzhanov, Alexandr G.; Borovinskaya, Inna P.; and Dubovitsky, Fedor I., 4,623,402, Cl. 148-20.300.

Borsig GmbH: *See*—
Holldorff, Gunther, 4,622,830, Cl. 62-238.300.

Bossler, Friedrich, to Carl Schenck AG. Device for orientation of chips. 4,623,058, Cl. 198-382.000.

Boston, Louis R., to Borden, Inc. Resealable package, method of making and use. 4,622,799, Cl. 53-415.000.

Bostwick, Myron A., Jr.: *See*—
Janko, Bozidar; Franzen, Norman R.; and Bostwick, Myron A., Jr., 4,623,819, Cl. 313-432.000.

Boudigues, Serge, to Office National d'Etudes et de Recherches Aerospatiales (par abreviation O.N.E.R.A.). Internal combustion engine supercharged by turbocompressor. 4,622,816, Cl. 60-606.000.

Boulier, Maurice, to Societe Technisynthese Sarl; and Sarl Chaussures Labelle. Shoes with supple soles, notably sports-shoes. 4,622,764, Cl. 36-68.000.

Boussemaer, Daniel: *See*—
Degoix, Bernard; and Boussemaer, Daniel, 4,623,495, Cl. 264-1.500.

Bowering, Cyril J., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence of Her Majesty's Canadian Government. Flexible broadband UHF antenna. 4,623,895, Cl. 343-829.000.

Brady, James H.: *See*—
Arora, Om P.; and Brady, James H., 4,623,514, Cl. 420-555.000.

Braestrup, Claus T.: *See*—
Huth, Andreas; Schmiechen, Ralph; Rahtz, Dieter; Seidelmann, Dieter; and Braestrup, Claus T., 4,623,649, Cl. 514-292.000.

Brandes, Wilhelm; Hanssler, Gerd; Reinecke, Paul; Scheinpflug, Hans; and Holmwood, Graham, to Bayer Aktiengesellschaft. Fungicidal compositions employing synergistic mixtures of a substituted 1-hydroxyethyl-triazole and triadimefon. 4,623,653, Cl. 514-383.000.

Brandes, Wilhelm: *See*—
Gayer, Herbert; Reinecke, Paul; Brandes, Wilhelm; and Hanssler, Gerd, 4,623,655, Cl. 514-399.000.

Brandt, William E.: *See*—
Price, Donald A., Jr.; Brandt, William E.; and Verheul, Jan, 4,623,106, Cl. 244-3.100.

Branson Ultrasonics Corporation: *See*—
Hinkley, Charles H., 4,623,420, Cl. 156-515.000.

Brashear, William S., Jr.: *See*—
Kemp, Billy W.; and Brashear, William S., Jr., 4,623,026, Cl. 175-76.000.

Brasseries Kronenbourg (S.A.): *See*—
Magoni, Pascal; Bernard, Jean-Pierre; and De Guglielmo, Pascal, 4,622,893, Cl. 100-2.000.

Braun, Wolfgang; and Konrath, Karl, to Robert Bosch GmbH. Fuel injection pump for internal combustion engines. 4,622,943, Cl. 123-502.000.

Bray, Andrew M.: *See*—
Hillesheim, Axel P.; and Bray, Andrew M., 4,623,410, Cl. 156-64.000.

Breitenfellner, Franz; Leidig, Karl; and Kainmuller, Thomas, to Ciba-Geigy Corporation. Process for producing light-reflecting bodies. 4,623,562, Cl. 427-296.000.

Breitschwerdt, Gunter: *See*—
Denner, Wolf J.; Biernacki, Andreas; and Breitschwerdt, Gunter, 4,622,888, Cl. 98-115.300.

Bresenham, Jack E.; Gay, Adrian C.; and Richards, John P., to International Business Machines. Graphics display system and method having improved clipping technique. 4,623,880, Cl. 340-723.000.

Brester, Robert R., to Velvac, Inc. Preset mirror mount. 4,623,115, Cl. 248-479.000.

Bridgeport Metal Goods Manufacturing Company, The: *See*—
Moore, Ralph F.; and Marshall, Francis G., 4,623,957, Cl. 362-200.000.

Bridon P.L.C.: *See*—
Paddington, Arthur L., 4,622,997, Cl. 137-595.000.

Briggs & Stratton Corp.: *See*—
Janisch, Douglas G., 4,622,935, Cl. 123-198.0DC.

British Library Board, The: *See*—
Wilman, Hugh, 4,623,247, Cl. 355-75.000.

British Steel Corporation: *See*—
Davis, Geoffrey; and Beal, Graham K., 4,623,133, Cl. 267-53.000.

Brock, Norbert: *See*—
Scheffler, Gerhard; Niemeyer, Ulf; Brock, Norbert; and Pohl, Jorg, 4,623,742, Cl. 558-81.000.

Broderick, Frederick J., to Haskel, Inc. Method for forming joints in pressurized fluid systems. 4,622,732, Cl. 29-421.00R.

Broecker, Franz J.; Gettert, Hans; and Kaempfer, Knut, to BASF Aktiengesellschaft. Desulfurization of H_2S-containing gases. 4,623,533, Cl. 423-573.00G.

Broecker, Franz J.; Duembgen, Gerd; Pies, Wolfgang; Schlichthaerle, Gottfried; and Weber, Guenter, to BASF Aktiengesellschaft. Preparation of methanol. 4,623,668, Cl. 518-709.000.

Bronchart, Robert D. E. M.: *See*—
Lepain, Andre; and Bronchart, Robert D. E. M., 4,623,468, Cl. 210-749.000.

Brooks, Berry A.; Kennette, John W.; and Buyofsky, Conrad C., to Chicopee. Lightly entangled and dry printed nonwoven fabrics and methods for producing the same. 4,623,575, Cl. 428-113.000.

Brooks, Howard L.: *See*—
Collins, Wendell; and Brooks, Howard L., 4,623,414, Cl. 156-307.500.

Brouwer, Charles W.: *See*—
Benjamin, Kenneth A.; and Brouwer, Charles W., 4,623,826, Cl. 318-254.000.
Brown, Christopher K.; Kensinger, Lex D.; Klopp, Gregory S.; Long, Alden O., Jr.; Moyer, Carl L.; Over, William R.; and Walter, Herman D., to AMP Incorporated. Apparatus for orientating elongate bodies. 4,623,293, Cl. 414-126.000.
Brown, John M.; Herritz, Donald W.; Ottinger, Barbara L.; and Westmas, Laland D., to Gerber Products Company. Nipple assembly. 4,623,068, Cl. 215-11.00R.
Brown, Joseph C.: *See*—
Glenn, James W.; and Brown, Joseph C., 4,624,009, Cl. 381-43.000.
Brown, Mark E.; Gamble, Bruce W.; Piatt, Michael J.; and Vandagriff, Randy D., to Eastman Kodak Company. Ink jet air-skiving start-up system. 4,623,897, Cl. 346-75.000.
Brown, Raymond: *See*—
Winston, Anthony E.; Brown, Raymond; Usen, Norman; and Ansaldi, Anthony, 4,623,536, Cl. 424-49.000.
Brown, Richard; and Sechi, Franco N., to RCA Corporation. Method of forming a continuous glass coating over the surface of an electrical device. 4,623,556, Cl. 427-41.000.
Brown, William R.: *See*—
Adler, Robert J.; Brown, William R.; Auyang, Lun; Liu, Yin-Chang; and Cook, W. Jeffrey, 4,623,372, Cl. 62-532.000.
Brown & Williamson Tobacco Corporation: *See*—
Emery, Clayton N.; and Harper, Howard M., 4,622,875, Cl. 83-80.000.
Bruckner, Raimund; Eschner, Axel; and Leupold, Hermann. Refractory member formed of fiber material for use in sliding closure unit. 4,623,130, Cl. 266-271.000.
Brun, Maurice: *See*—
Barberi, Paul; Bergez, Pierre; Brun, Maurice; Chevalier, Michel; Eyraud, Charles; and Quinson, Jean-Francois, 4,623,263, Cl. 374-33.000.
Brunelli, Richard J.; and Mestman, Scott J., to Varian Associates, Inc. Apparatus for producing tissue compensating filter for use in radiation. 4,623,288, Cl. 409-84.000.
Brunken, Walter R.: *See*—
Dempsey, William J.; Brunken, Walter R.; and Mailhiot, Alfred F., Jr., 4,622,729, Cl. 29-33.00A.
Brunner, Hans-Georg, to Ciba-Geigy Corporation. Cyclohexanedionecarboxylic acid derivatives with herbicidal and plant growth regulating properties. 4,623,382, Cl. 71-94.000.
Brunner, Hubert: *See*—
Pertzsch, Albert; Brunner, Hubert; and Zeroni, Ludwig, 4,623,105, Cl. 242-198.000.
Brunnmueller, Fritz; Kroner, Michael; Hartmann, Heinrich; Linhart, Friedrich; and Pfitzner, Klaus, to BASF Aktiengesellschaft. Preparation of linear, basic polymer powders. 4,623,699, Cl. 525-355.000.
Brunswick Corporation: *See*—
Cacak, Harold L., 4,623,101, Cl. 242-45.000.
Buchan, William R.; Faucher, Jerome R.; and Cosby, John M., to Nashua Corporation. Developing apparatus and method for a photocopier employing liquid development. 4,623,241, Cl. 355-10.000.
Buchl, Andrew F. Floating piston depth control apparatus. 4,622,884, Cl. 91-445.000.
Buchroeder, Richard A.; Palmer, Eric M.; and Sukhman, Yefim P., to Dow Corning Corporation. Ring of light laser optics system. 4,623,776, Cl. 219-121.0LG.
Buck, Hermann, to Bielomatik Leuze GmbH. Piling device for bound sets of sheets. 4,623,291, Cl. 414-31.000.
Buckens, Pierre F., to Knogo Corporation. Method and apparatus for detection of targets in an interrogation zone. 4,623,877, Cl. 340-572.000.
Buckley, John E., to Securistyle Limited. Friction supporting stays for windows. 4,622,715, Cl. 16-370.000.
Buder, Wolfgang: *See*—
Deschler, Ulrich; Buder, Wolfgang; Kleinschmit, Peter; and Michel, Rudolf, 4,623,740, Cl. 556-421.000.
Buechel, Frederick F.; and Pappas, Michael J. Stem-type femoral prosthesis including a collar provided with access slots for bone resectioning means. 4,623,353, Cl. 623-23.000.
Buehler Ltd.: *See*—
Nelson, James A.; and Zimmer, Robert E., 4,623,500, Cl. 264-162.000.
Buettner, Leonard C.: *See*—
James, John T.; Buettner, Leonard C.; and Genovese, James A., 4,622,852, Cl. 73-865.600.
Bukin, Boris A.: *See*—
Ivanov, Mikhail G.; Golov, Veniamin G.; Kuzmin, Vladimir N.; Alyakrinskaya, Aida I.; Mushy, Roman Y.; Kovalev, Alexei D.; Shutova, Nadezhda V.; Rodionov, Jury A.; Molev, Igor I.; Yakovleva, Ljudmila S.; Berezin, Vitaly B.; Petrashko, Alexei I.; Shaev, Gennady M.; Bukin, Boris A.; Belkina, Tamara M., deceased; and Belkin, Naum S., administrator, 4,623,731, Cl. 548-374.000.
Burst, Wolf-Eckhart, to Siemens Aktiengesellschaft. Surface acoustic wave resonator filter having randomly interrupted reflector strips. 4,623,855, Cl. 333-195.000.
Bumgardner, Donald L., to Northern Telecom Limited. Fastener for mounting a circuit board or the like to a frame. 4,622,725, Cl. 24-453.000.
Bumgarner, Michael P.: *See*—
Katchis, Louis J.; and Bumgarner, Michael P., 4,622,979, Cl. 128-702.000.
Bumuller, Lothar; Engelmann, Alfred; Kille, Franz; Maier, Alfred; Scharf, Otto; and Worner, Fritz, to Fleissner GmbH & Company. Method and apparatus for shrinkproofing tubular fabric. 4,622,728, Cl. 26-18.500.
Bunch, Ernest B., Jr. Printing press. 4,623,136, Cl. 270-1.100.
Burg, Thomas J., to Westinghouse Electric Corp. Wheel bearing protection apparatus. 4,623,269, Cl. 384-548.000.
Burnham, Robert D.: *See*—
Streifer, William; Scifres, Donald R.; Burnham, Robert D.; and Paoli, Thomas L., 4,624,000, Cl. 372-45.000.
Burroughs Corporation: *See*—
Flora, Laurence P.; and McCullough, Michael A., 4,623,805, Cl. 307-602.000.
Steen, Grant F.; and Holloway, Michael, 4,623,752, Cl. 174-35.0GC.
Burstell, Helmut: *See*—
Schmierer, Roland; Handte, Reinhard; Mildenberger, Hilmar; Bauer, Klaus; Bieringer, Hermann; and Burstell, Helmut, 4,623,380, Cl. 71-92.000.
Burton, Thomas M.: *See*—
Kucharska, Helena Z.; and Burton, Thomas M., 4,623,479, Cl. 252-350.000.
Busch, Michael-Rainer: *See*—
Abthoff, Jorg; Schuster, Hans-Dieter; Wollenhaupt, Gottfried; Loose, Gunter; and Busch, Michael-Rainer, 4,622,809, Cl. 60-274.000.
Busch, Paul F.: *See*—
Derbyshire, Rodney L.; and Busch, Paul F., 4,623,401, Cl. 148-13.000.
Butler, James R.: *See*—
Kendall, Debra L.; Butler, James R.; and Menard, Kevin P., 4,623,431, Cl. 203-9.000.
Menard, Kevin P.; Butler, James R.; and Watson, James M., 4,623,430, Cl. 203-9.000.
Buyofsky, Conrad C.: *See*—
Brooks, Berry A.; Kennette, John W.; and Buyofsky, Conrad C., 4,623,575, Cl. 428-113.000.
C-I-L Inc.: *See*—
Cameron, Gordon M.; and McFarland, John, 4,622,921, Cl. 122-7.00C.
Cacak, Harold L., to Brunswick Corporation. Filament tensioner. 4,623,101, Cl. 242-45.000.
Cactus Wellhead Equipment Co., Inc.: *See*—
Nichols, Randy P., 4,623,020, Cl. 166-88.000.
Cadoux, Jean-Elie: *See*—
Benaroya, Henry; Le Foll, Jean; and Cadoux, Jean-Elie, 4,623,459, Cl. 210-242.300.
Cairns, John F., to Imperial Chemical Industries PLC. Electrode for use in electrolytic cell. 4,623,440, Cl. 204-231.000.
Calagui, Juanito B. Fishing lure assembly with explosive projectile. 4,622,773, Cl. 43-43.160.
Callahan, James L.: *See*—
Paparizos, Christos; Shaw, Wilfrid G.; and Callahan, James L., 4,623,635, Cl. 502-215.000.
Calviello, Joseph A., to Eaton Corporation. Buried channel MESFET with backside source contact. 4,624,004, Cl. 357-22.000.
Cameron, Gordon M.; and McFarland, John, to C-I-L Inc. Combined sulphur burning furnace and boiler. 4,622,921, Cl. 122-7.00C.
Cametti, Richard J.; and Mitton, Rodney A., to Dresser Industries, Inc. Method and apparatus for swing gear and bearing assembly for power mining shovel. 4,622,860, Cl. 74-448.000.
Campbell, John G.: *See*—
Cline, Ronald L.; and Campbell, John G., 4,623,802, Cl. 307-297.000.
Campbell Soup Company: *See*—
Cramer, Clarence W.; and deVries, Roelof, 4,622,891, Cl. 99-450.400.
Canada, Her Majesty the Queen in right of: *See*—
Bell, Malcolm E.; McFee, John E.; Morewood, Henry W.; and Coffey, Clayton G., 4,623,842, Cl. 324-245.000.
Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence of Her Majesty's Canadian Government: *See*—
Bowering, Cyril J., 4,623,895, Cl. 343-829.000.
Candian Patents and Development Limited: *See*—
Elliot, James I.; Timbers, Gordon E.; Modler, H. Wayne; and Allen, Robert W., 4,623,541, Cl. 424-85.000.
Canon Kabushiki Kaisha: *See*—
Asano, Junichi; Ishii, Hiroyuki; and Kosugiyama, Otoya, 4,623,938, Cl. 358-285.000.
Hashimoto, Kenichiro, 4,623,903, Cl. 346-76.0PH.
Ichihashi, Hiroo; Toganoh, Shigeo; and Matsufuji, Yohji, 4,623,903, Cl. 346-140.00R.
Kamata, Shigeru, 4,623,227, Cl. 350-430.000.
Kaneda, Naoya; Iwasaki, Youichi; and Tohyama, Masamichi, 4,623,237, Cl. 354-403.000.
Kondo, Hiroatsu, 4,623,272, Cl. 400-208.000.
Sakakibara, Kenzo, 4,623,899, Cl. 346-76.0PH.
Sato, Hideki; and Sugiura, Yoshinori, 4,623,216, Cl. 350-6.800.
Shimizu, Masami; and Matsuyama, Shinichi, 4,623,234, Cl. 354-286.000.
Tanaka, Kiyoharu; Ohno, Akio; Murayama, Yasushi; Hoshino, Osamu; and Takada, Yusaku, 4,622,916, Cl. 118-688.000.
Toyomura, Shigeru, 4,623,970, Cl. 364-513.500.
Yoshikawa, Junichi, 4,623,806, Cl. 310-12.000.
Cardenas-Franco, Luis; and Heredia de la Paz, Jorge A., to Vitro Tec Fideicomiso. System of speed control for glass article forming machines. 4,623,375, Cl. 65-163.000.

Cardiac Monitoring, Inc.: *See—*
Katchis, Louis J.; and Bumgarner, Michael P., 4,622,979, Cl. 128-702.000.
Cardin, Auther B. Tape applicator. 4,623,421, Cl. 156-523.000.
Carl Schenck AG.: *See—*
Bossler, Friedrich, 4,623,058, Cl. 198-382.000.
Carlin, Lawrence: *See—*
Vensko, George; Carlin, Lawrence; Nelson, Mark W.; and Smith, A. Richard, 4,624,008, Cl. 381-43.000.
Carlingswitch, Inc.: *See—*
Krasij, Bohdan; and Mune, Charles, 4,623,861, Cl. 335-202.000.
Carp, Ralph W.; and Harvey, Mark C., to Allied Corporation. Automatic calibration apparatus for an automotive control system. 4,623,976, Cl. 364-571.000.
Carpino, Louis A.; and Cohen, Beri, to Research Corporation. Process for peptide synthesis. 4,623,484, Cl. 525-54.110.
Carrier Corporation: *See—*
Fraser, Bruce A., 4,623,326, Cl. 494-34.000.
Carroll, Charles. High security door latch and deadbolt. 4,623,175, Cl. 292-40.000.
Carter, Christopher E., to Research Corporation. Oarlock. 4,623,315, Cl. 440-106.000.
Carter, Duane: *See—*
Spencer, John E.; Carter, Duane; and Autery, Dave, 4,623,417, Cl. 156-345.000.
Casals-Stenzel, Jorge; Weber, Karl-Heinz; Walther, Gerhard; Harreus, Albrecht; and Muacevic, Gojko, to Boehringer Ingelheim KG. PAF-antagonistic diazepines, methods of use. 4,623,646, Cl. 514-220.000.
Casio Computer Co., Ltd.: *See—*
Matsubara, Akinori, 4,622,879, Cl. 84-1.030.
Cassel, Scott T.: *See—*
Cassel, Thomas R.; and Cassel, Scott T., 4,623,164, Cl. 280-689.000.
Cassel, Thomas R.; and Cassel, Scott T., to BKS Company. Band clamp for axle assembly and the like. 4,623,164, Cl. 280-689.000.
Cawley, James M.; and Chonody, John W. Fishing lure retriever. 4,622,772, Cl. 43-17.200.
CBS Inc.: *See—*
Sharp, Paul H., 4,622,878, Cl. 84-1.240.
Celanese Corporation: *See—*
Azarnia, Farah D.; and Elmore, Jimmy D., 4,623,680, Cl. 523-412.000.
Felton, Clinton D.; Gibson, Baylor D.; Jamison, Charles E.; McWhorter, William O.; and Serad, George A., 4,623,438, Cl. 204-168.000.
Cem- Compagnie Electro-Mecanique et Compagnie: *See—*
Volut, Serge, 4,623,948, Cl. 361-13.000.
Central Glass Company, Limited: *See—*
Umeya, Kaoru; Mishima, Michiharu; and Sugata, Yoshihiro, 4,623,586, Cl. 428-324.000.
Central Illinois Manufacturing Co.: *See—*
Ayers, William R., 4,623,560, Cl. 427-184.000.
Centre de Recherche Industrielle du Quebec: *See—*
Lam Shang Leen, Kee K., 4,623,526, Cl. 423-277.000.
Centre National de la Recherche Scientifique: *See—*
Pouey, Michel, 4,623,251, Cl. 356-328.000.
Centre Nationale de la Recherche Scientifique: *See—*
Barberi, Paul; Bergez, Pierre; Brun, Maurice; Chevalier, Michel; Eyraud, Charles; and Quinson, Jean-Francois, 4,623,263, Cl. 374-33.000.
Ceradyne Advanced Products, Inc.: *See—*
Beckwith, Elaine C.; and Ezis, Andre, 4,623,498, Cl. 264-65.000.
Ceskoslovenska akademie ved: *See—*
Dudek. Josef; and Adamek, Stanisvlav, 4,622,750, Cl. 33-1.00H.
Cetus Corporation: *See—*
Huang, Chun-Ming; and Cohen, Stanley N., 4,623,627, Cl. 435-240.000.
Cewers, Goran; and Olsson, Sven-Gunnar, to Siemens Aktiengesellschaft; and Siemens Elema AB. Apparatus for the registration of drops in an infusion device. 4,623,331, Cl. 604-65.000.
Chakrabarty, Tapan; and Thomas, Ray, to Exxon Production Research Co. Well sand packing prevention method. 4,623,022, Cl. 166-310.000.
Chambu, Claude: *See—*
Cornut, Bruno; Chambu, Claude; and Seris, Jean-Louis, 4,623,519, Cl. 422-72.000.
Champagne, Jean-Paul: *See—*
Dufresne, Michel; Champagne, Jean-Paul; Dufresne, Daniel; Scott, Pierre; and Courtney, John, 4,623,920, Cl. 358-122.000.
Champion Building Systems, Inc.: *See—*
Betts, Daniel L., 4,622,792, Cl. 52-263.000.
Champion International Corporation: *See—*
Bohme, Reinhard D.; and Overholt, Steven D., 4,623,412, Cl. 156-210.000.
Chandrashekhar, G. V.; and Shafer, Merrill W., to International Business Machines Corporation. Stable surface coating for ink jet nozzles. 4,623,906, Cl. 346-140.00R.
Chang, Chuan C.; Kahng, Dawon; Kamgar, Avid; and Parrillo, Louis C., to AT&T Bell Laboratories. Nitrided silicon dioxide layers for semiconductor integrated circuits. 4,623,912, Cl. 357-54.000.
Chang, Wen-Hsuan; and McKeough, David T., to PPG Industries, Inc. Ungelled resins containing hydrolyzable moieties from organosilane compounds. 4,623,697, Cl. 525-61.000.
Chappell, William A.; Higgins, David T.; Reynolds, Michael; and Tweed, William J., to Rival Manufacturing Company. Percolator including pump type dispenser. 4,622,889, Cl. 99-312.000.
Chareire, Jean-Louis: *See—*
Lapeyre, Didier; and Chareire, Jean-Louis, 4,623,350, Cl. 623-3.000.
Charmilles Technologies S.A.: *See—*
Fery, Philippe; and Delpretti, Roger, 4,623,772, Cl. 219-69.00M.
Chase, William; and Martin, Armand, to Shape Inc. Antitheft container for a recording medium and method for manufacturing same. 4,623,062, Cl. 206-311.000.
Chaussy, Christian: *See—*
Forssmann, Bernd; and Chaussy, Christian, 4,622,969, Cl. 128-328.000.
Chauvel, Gerard, to Texas Instruments Incorporated. Memory access controller having cycle number register for storing the number of column address cycles in a multiple column address/single row address memory access cycle. 4,623,986, Cl. 364-900.000.
Chavarria, Jose F.; and Chavarria, Tina F. Engine washing cover for cab-over engines. 4,623,186, Cl. 296-1.00R.
Chavarria, Tina F.: *See—*
Chavarria, Jose F.; and Chavarria, Tina F., 4,623,186, Cl. 296-1.00R.
Che, Stanley C.; and Madgavkar, Ajay, to Occidental Oil Shale, Inc. Upgrading shale oil by a combination process. 4,623,444, Cl. 208-92.000.
Chem-Technics, Inc.: *See—*
Conner, Jesse R., 4,623,469, Cl. 210-751.000.
Chen, Chyi-Cheng; and Whistler, Roy L., to Purdue Research Foundation. Synthesis of L-fructose and derivatives thereof. 4,623,721, Cl. 536-4.100.
Chen, Keming J., to RCA Corporation. Signal-seeking tuning system with a seaching mode activated by the user's operation of a manual band switch. 4,624,014, Cl. 455-168.000.
Chen, Tsong M.: *See—*
Baum, Jonathan S.; and Chen, Tsong M., 4,623,379, Cl. 71-92.000.
Chevalier, Michel: *See—*
Barberi, Paul; Bergez, Pierre; Brun, Maurice; Chevalier, Michel; Eyraud, Charles; and Quinson, Jean-Francois, 4,623,263, Cl. 374-33.000.
Chevron Research Company: *See—*
Goodrich, Judson E., 4,623,395, Cl. 106-273.00R.
Chew, Ju-Nam, to Mobil Oil Corporation. Method for controlling water influx into underground cavities. 4,623,283, Cl. 405-270.000.
Chicopee: *See—*
Brooks, Berry A.; Kennette, John W.; and Buyofsky, Conrad C., 4,623,575, Cl. 428-113.000.
Chien, Du-Shieng: *See—*
Schoenwald, Ronald D.; and Chien, Du-Shieng, 4,623,664, Cl. 514-653.000.
Chikada, Ichizo; Shoji, Isamu; and Sakaniwa, Hideyasu, to Sanyo Electric Co., Ltd.; and Tokyo Sanyo Electric Co., Ltd. Hermetically sealed rotary compressor. 4,623,304, Cl. 417-312.000.
Chikaoka, Keiko: *See—*
Abou, Shouji; and Chikaoka, Keiko, 4,623,852, Cl. 331-111.000.
Childress, Dudley; and Strysik, John, to Northwestern University. Myoelectrically controlled artificial hand. 4,623,354, Cl. 623-25.000.
Chinju, Minoru: *See—*
Iimura, Tsutomu; and Chinju, Minoru, 4,623,603, Cl. 430-108.000.
Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T.: *See—*
Szejtli, Jozsef; Szejtli nee Rengei, Magdolna; Cseh, Gyorgy; and Stadler, Istvan, 4,623,641, Cl. 514-58.000.
Chisso Corporation: *See—*
Ogawa, Tetsuya; Goto, Yasuyuki; Kitano, Kisei; and Yoshida, Naoyuki, 4,623,477, Cl. 252-299.500.
Chomet, Marc, to Teleglobe Pay-TV System, Inc. Pay television system utilizing multi-frequency passive filters. 4,623,918, Cl. 358-118.000.
Chonody, John W.: *See—*
Cawley, James M.; and Chonody, John W., 4,622,772, Cl. 43-17.200.
Christensen, Margery. Arm sling with mitten pocket. 4,622,961, Cl. 128-94.000.
Chu, Ruey S.: *See—*
Lee, Kuan M.; Chu, Ruey S.; Wong, Nam S.; Clark, James U.; and Tang, Raymond, 4,623,894, Cl. 343-700.0MS.
Chujo, Satoru; and Mitamura, Kenichi, to Nissan Motor Company, Limited. Automotive drive guide system with error monitor for a magnetic compass therein. 4,622,754, Cl. 33-356.000.
Chung, Jing-Yau, to Health Jet, Inc. Portable hygenic warm water jet having disposable nozzle tip. 4,622,704, Cl. 4-443.000.
Church & Dwight Co., Inc.: *See—*
Winston, Anthony E.; Brown, Raymond; Usen, Norman; and Ansaldi, Anthony, 4,623,536, Cl. 424-49.000.
Church, Jonathan C. M., to National Research Development Corporation. Endoprosthetic bone joint devices. 4,623,351, Cl. 623-22.000.
Ciba-Geigy Corporation: *See—*
Back, Gerhard; and Mosimann, Walter, 4,623,358, Cl. 8-620.000.
Bernheim, Michael; Meindl, Hubert; Rohringer, Peter; Wegmuller, Hans; and Werthemann, Dieter, 4,623,428, Cl. 162-158.000.
Breitenfellner, Franz; Leidig, Karl; and Kainmuller, Thomas, 4,623,562, Cl. 427-296.000.
Brunner, Hans-Georg, 4,623,382, Cl. 71-94.000.
Durrr, Dieter; and Tobler, Hans, 4,623,378, Cl. 71-92.000.
Gugumus, Francois, 4,623,480, Cl. 252-400.530.
Hubele, Adolf, 4,623,727, Cl. 546-178.000.
Kristiansen, Odd; Drabek, Jozef; and Fluck, Victor, 4,623,642, Cl. 514-84.000.

Rosenberger, Siegfried; and Stegmann, Werner, 4,623,745, Cl. 560-15.000.

Ciccarelli, Roger N., to Xerox Corporation. Toner compositions with negative charge enhancing additives. 4,623,606, Cl. 430-110.000.

Cincinnati Milacron Inc.: *See—*
Ailman, LaVerne K.; Riggen, Danny E.; and Tarvin, Ronald L., 4,623,971, Cl. 364-513.000.

Ciraldo, Joann; Ciraldo, Joseph R.; and Spector, George. Precious baby diaper. 4,623,339, Cl. 604-359.000.

Ciraldo, Joseph R.: *See—*
Ciraldo, Joann; Ciraldo, Joseph R.; and Spector, George, 4,623,339, Cl. 604-359.000.

Citizen Watch Co., Ltd.: *See—*
Kamiyama, Yasuo, 4,623,260, Cl. 368-80.000.
Muto, Takeo, 4,623,261, Cl. 368-80.000.

Citti, James: *See—*
Wallin, Glenn; Rosenwald, Diane; Citti, James; and Yong, Samuel, 4,623,542, Cl. 426-94.000.

Clampitt, Bert H.; Deysarkar, Asoke K.; and Westmoreland, Thomas D., Jr., to Pennzoil Company. Breaking middle phase emulsions. 4,623,447, Cl. 208-187.000.

Clark Equipment Company: *See—*
Roney, Thomas W., 4,623,196, Cl. 297-464.000.

Clark, James U.: *See—*
Lee, Kuan M.; Chu, Ruey S.; Wong, Nam S.; Clark, James U.; and Tang, Raymond, 4,623,894, Cl. 343-700.0MS.

Clarke, Thomas L. Anastigmatic eyepiece. 4,623,224, Cl. 350-410.000.

Clausen, Anthony R. Fastening device. 4,623,176, Cl. 292-74.000.

Clement, Gilbert: *See—*
Vantard, Georges; Clement, Gilbert; and Vasseur, Jean-Pierre, 4,623,450, Cl. 210-87.000.

Cline, Ronald L.; and Campbell, John G., to Fairchild Semiconductor Corporation. Multiple-stage gate network having independent reference voltage sources. 4,623,802, Cl. 307-297.000.

CNG Research Company: *See—*
Adler, Robert J.; Brown, William R.; Auyang, Lun; Liu, Yin-Chang; and Cook, W. Jeffrey, 4,623,372, Cl. 62-532.000.

Coan, Frederick L.: *See—*
Dembicki, Dennis R.; Coan, Frederick L.; Glassford, Craig L.; and Overman, Dana C., 4,623,704, Cl. 526-68.000.

Coburn Optical Industries, Inc.: *See—*
Ezrielev, Robert I.; Kamen, Melvin E.; and Petcen, Donald H., 4,623,708, Cl. 526-314.000.

Codd, Edwin T., to Tulserate Limited. Space frames. 4,622,795, Cl. 52-648.000.

Coffey, Clayton G.: *See—*
Bell, Malcolm E.; McFee, John E.; Morewood, Henry W.; and Coffey, Clayton G., 4,623,842, Cl. 324-245.000.

Cohen, Arie, to Dow Chemical Company, The. Method and apparatus for the extrusion of synthetic resinous thermoplastics. 4,623,502, Cl. 264-176.100.

Cohen, Beri: *See—*
Carpino, Louis A.; and Cohen, Beri, 4,623,484, Cl. 525-54.110.

Cohen, Stanley N.: *See—*
Huang, Chun-Ming; and Cohen, Stanley N., 4,623,627, Cl. 435-240.000.

Coiro, Donald: *See—*
Lewis, Jean D.; Goldschmidt, Willfred; Coiro, Donald; and Engler, Phillip V., 4,623,235, Cl. 354-312.000.

Cole, William M.: *See—*
Beinor, Robert T.; and Cole, William M., 4,623,713, Cl. 528-930.000.

Coleman, Jerry T.; and Sepaniak, Michael J., to University of Tennessee Research Corporation. Apparatus and method for in-vivo measurements of chemical concentrations. 4,622,974, Cl. 128-634.000.

Coleman, William M., III: *See—*
Bedell, Stephen A.; Coleman, William M., III; and Howell, William R., Jr., 4,623,707, Cl. 526-142.000.

Collen, Desire J., to KabiVitrum AB. Novel composition of matter of antithrombin III bound to a heparin fragment. 4,623,718, Cl. 530-393.000.

Collins, Wendell; and Brooks, Howard L., to SWS Silicones Corporation. Process for preparing an aqueous undertread adhesive composition. 4,623,414, Cl. 156-307.500.

Columbia Gas System Service Corporation: *See—*
Nebgen, John W.; and Hinshaw, Gary D., 4,623,435, Cl. 204-148.000.

Combustion Engineering, Inc.: *See—*
Teigen, Bard C., 4,623,309, Cl. 431-170.000.

Commissariat a l'Energie Atomique: *See—*
Aubert, Jean-Jacques; Bechevet, Bernard; and Daval, Jacques, 4,623,423, Cl. 156-603.000.
Barberi, Paul; Bergez, Pierre; Brun, Maurice; Chevalier, Michel; Eyraud, Charles; and Quinson, Jean-Francois, 4,623,263, Cl. 374-33.000.

Conair Corporation: *See—*
Raab, John J., 4,623,779, Cl. 219-222.000.

Conner, Jesse R., to Chem-Technics, Inc. Method for rendering hazardous wastes less permeable and more resistant to leaching. 4,623,469, Cl. 210-751.000.

Conolly, Ralph I., to Rolls-Royce Limited. Application of coatings to articles. 4,623,087, Cl. 228-176.000.

Construction Specialties, Inc.: *See—*
Geortner, Jack, 4,622,794, Cl. 52-403.000.

Conta, Renato; Perucca, Vincenzo; and Rocchi, Remo, to Ing. C. Olivetti & C., S.p.A. Ink-jet printing head, a method for its manufacture, and a tool useable for carrying out this method. 4,623,904, Cl. 346-140.00R.

Conti, Mario W. Recessed adjustable lighting fixture. 4,623,956, Cl. 362-148.000.

Continental Conveyor and Equipment Company, Inc.: *See—*
Pentith, Gerald R. O., 4,623,061, Cl. 198-805.000.

Continental Gummi-Werke Aktiengesellschaft: *See—*
Seitz, Hans; Frerichs, Udo; Rach, Heinz-Dieter; and Spendel, Siegmund, 4,623,009, Cl. 152-380.000.

Cook, Melvin W.; and Schmidt, Carl J., to Masonite Corporation. Base molding. 4,622,791, Cl. 52-241.000.

Cook, W. Jeffrey: *See—*
Adler, Robert J.; Brown, William R.; Auyang, Lun; Liu, Yin-Chang; and Cook, W. Jeffrey, 4,623,372, Cl. 62-532.000.

Cooper, James W. Shelving support structure. 4,623,065, Cl. 211-187.000.

Cope, Charles S., to Du Pont de Nemours, E. I., and Company. Process for recovery of fluorosurfactants. 4,623,487, Cl. 260-408.000.

Copp, Douglas M., to General Motors Corporation. Shoe hold-down pin and spring clip. 4,623,050, Cl. 188-340.000.

Cornell Research Foundation, Inc.: *See—*
Dalman, G. Conrad; and Lee, Charles A., 4,623,849, Cl. 330-287.000.

Cornils, Boy: *See—*
Bexten, Ludger; Cornils, Boy; and Kupies, Dieter, 4,623,490, Cl. 260-505.00P.

Cornut, Bruno; Chambu, Claude; and Seris, Jean-Louis, to Societe Nationale Elf Aquitaine. Cell for analysis device, to collect a fraction of a liquid sample for reaction and analysis. 4,623,519, Cl. 422-72.000.

Cornwall, Kenneth R. Coupling. 4,623,170, Cl. 285-4.000.

Corominas, Narciso L., to Metalquimia, S.A., San Ponc de la Barca. Retractile needle meat pieces injecting machine. 4,622,892, Cl. 99-533.000.

Cosby, John M.: *See—*
Buchan, William R.; Faucher, Jerome R.; and Cosby, John M., 4,623,241, Cl. 355-10.000.

Cosden Technology, Inc.: *See—*
Kendall, Debra L.; Butler, James R.; and Menard, Kevin P., 4,623,431, Cl. 203-9.000.
Menard, Kevin P.; Butler, James R.; and Watson, James M., 4,623,430, Cl. 203-9.000.

Costanza: John R.; and Terwedow, Henry A., to Les Produits Organiques du Santerre-Orsan S.A. ("Orsan"). Controlled release insecticide composition. 4,623,540, Cl. 424-81.000.

Costanza Pty. Limited: *See—*
Dutch, Geoffrey C.; and Dutch, Trevor K., 4,623,128, Cl. 256-65.000.

Costil, Marcel, to Atelier de Rectification et d'Affutage A.R.A.F. Cutting tip for rotary machining, a tool fitted with such tips and a process for sharpening such tips. 4,623,285, Cl. 407-41.000.

Cote, Gerard G.: *See—*
Dubreuil, Luc T.; Pouliot, Gaston D.; Cote, Gerard G.; Larouche, Rejean; and Zuber, Bretislav P., 4,622,741, Cl. 29-858.000.

Cottringer, Thomas E.; van de Merwe, Ronald H.; and Bauer, Ralph, to Norton Company. Abrasive material and method for preparing the same. 4,623,364, Cl. 51-309.000.

Courtney, John: *See—*
Dufresne, Michel; Champagne, Jean-Paul; Dufresne, Daniel; Scott, Pierre; and Courtney, John, 4,623,920, Cl. 358-122.000.

Cozewith, Charles: *See—*
Irani, Cyrus A.; Cozewith, Charles; and Kasegrande, Stephen S., 4,623,712, Cl. 528-498.000.

Cramer, Clarence W.; and deVries, Roelof, to Campbell Soup Company. Sandwich cookies, apparatus for making same. 4,622,891, Cl. 99-450.400.

Crandall, Robert E.; Kosulic, Kenneth F.; Rooney, Thomas C.; and Smith, Larry C., to Rexnord Inc. Belt press load bearing measuring means. 4,622,894, Cl. 100-118.000.

Crawford, Larry C., to Training Labs, Inc. Changeable modular training system to provide instruction for installing, servicing, troubleshooting and operating electromechanical control systems. 4,623,312, Cl. 434-224.000.

Creedon, Richard L., to GA Technologies Inc. Cryostat suspension system. 4,622,824, Cl. 62-55.000.

Crosfield Electronics Limited: *See—*
Darby, Samuel E.; and Manley, George C., 4,623,972, Cl. 364-526.000.

Cross, Andrew L.; and Moran, Thomas F., Jr., to Midwest Plastic Fabricators. Process for forming plastic pipe couplings. 4,623,506, Cl. 264-573.000.

Cross, Jon R.: *See—*
Johnson, Orlin W.; Larson, Michael P.; Benson, Richard E.; Kerber, Dathan R.; and Cross, Jon R., 4,622,805, Cl. 56-14.300.

Crystalate Electronics Limited: *See—*
Pitcher, Arnold, 4,623,868, Cl. 338-160.000.

Cseh, Gyorgy: *See—*
Szejtli, Jozsef; Szejtli nee Rengei, Magdolna; Cseh, Gyorgy; and Stadler, Istvan, 4,623,641, Cl. 514-58.000.

CTS Corporation: *See—*
Kuo, Charles C. Y.; and Bloom, Terry R., 4,623,482, Cl. 252-512.000.

Cullen, Richard A.; and Thorvick, Thomas S., to Cyclomatic Industries, Inc. Optical tracker control system. 4,623,778, Cl. 219-124.340.

Cullo, Leonard A.; Restelli, Edward F., Jr.; and Shiring, Francis J., III, to United States Steel Corporation. Crystalline magnesia-silica composites and process for producing same. 4,623,530, Cl. 423-331.000.

Curlee, James D. Therapeutic corset. 4,622,957, Cl. 128-78.000.

Cuschera, Casper. Drain fitting with frictional seal retention. 4,622,703, Cl. 4-286.000.

Cutter, David: *See—*
Binder, Josef; Cutter, David; Henning, Wolfgang; Schaber, Hans-Christian; Mollmer, Frank; and Reichert, Hansjorg, 4,622,856, Cl. 73-727.000.

Cyclomatic Industries, Inc.: *See—*
Cullen, Richard A.; and Thorvick, Thomas S., 4,623,778, Cl. 219-124.340.

D. Swarovski & Co.: *See—*
Porcham, Wolfgang, 4,623,531, Cl. 423-347.000.

Dage, Richard C.: *See—*
Grisar, J. Martin; Dage, Richard C.; and Schnettler, Richard A., 4,623,651, Cl. 514-342.000.

D'Agosto, Nicholas A., III: *See—*
Paulson, Robert T.; Sevitsky, Gary S.; and D'Agosto, Nicholas A., III, 4,623,988, Cl. 364-900.000.

Dahl, Randy L., to Motorola, Inc. Spin activated mechanism. 4,622,898, Cl. 102-237.000.

Dahlberg, John R.: *See—*
McGuire, Kenneth J.; Dahlberg, John R.; and Hyatt, Charles J., 4,623,296, Cl. 414-730.000.

Daikin Kogyo Co., Ltd.: *See—*
Enjo, Naonori; and Harada, Yuhkow, 4,623,475, Cl. 252-68.000.

Daikyo Co., Ltd.: *See—*
Takahashi, Kinya, 4,623,010, Cl. 152-450.000.

Daimler-Benz Aktiengesellschaft: *See—*
Abthoff, Jorg; Schuster, Hans-Dieter; Wollenhaupt, Gottfried; Loose, Gunter; and Busch, Michael-Rainer, 4,622,809, Cl. 60-274.000.
Andres, Rudolf; Fussnegger, Wolfgang; Grantz, Helmut; and Heiss, Werner, 4,623,166, Cl. 280-751.000.

Dakin, Thomas W., to Westinghouse Electric Corp. Dielectric fluid, capacitor, and transformer. 4,623,953, Cl. 361-315.000.

Dalman, G. Conrad; and Lee, Charles A., to Cornell Research Foundation, Inc. Broadband high power IMPATT amplifier circuit. 4,623,849, Cl. 330-287.000.

Dambach, Philip J.; and Kachlic, Jerry D., to Molex Incorporated. Shielded connector assembly. 4,623,211, Cl. 339-143.00R.

Dana Corporation: *See—*
Hobson, Donald E., 4,622,859, Cl. 74-15.880.

Danby, Hal C.; and Beigler, Myron A., to Minnesota Mining and Manufacturing Company. Ear canal electrode. 4,622,975, Cl. 128-642.000.

Danieli & C. Officine Meccaniche S.p.A.: *See—*
Klaucic, Luciano, 4,623,016, Cl. 164-425.000.

Daniels, John Y.: *See—*
Hendrix, James E.; Lane, Kimberley J.; and Daniels, John Y., 4,623,356, Cl. 8-107.000.

Daniels, William A., to American Cyanamid Company. Method for oxidizing alkyl groups on pyridine, quinoline and benzene ring compounds to carboxylic acids under basic conditions. 4,623,726, Cl. 546-168.000.

Darby, Samuel E.; and Manley, George C., to Crosfield Electronics Limited. Half-tone dot imaging. 4,623,972, Cl. 364-526.000.

Dare Products, Inc.: *See—*
Wilson, Robert M., Jr., 4,623,756, Cl. 174-158.00F.

Darnell, William R.; and Jackson, Winston J., Jr., to Eastman Kodak Company. Aromatic poly(ether-carbonate) containing ethyleneoxy and arylene oxy moieties. 4,623,675, Cl. 521-180.000.

Darrow, John O. G., to American Standard Inc. Vital code generating circuit. 4,623,850, Cl. 331-56.000.

Daude, Gerard; and Girard, Philippe, to Saint-Gobain Vitrage. Adhesive in preparation of laminates. 4,623,592, Cl. 428-423.300.

Daval, Jacques: *See—*
Aubert, Jean-Jacques; Bechevet, Bernard; and Daval, Jacques, 4,623,423, Cl. 156-603.000.

Davenport, James H., to Eurotechnik (U. K.) Limited. Filter press and separator mechanism. 4,623,453, Cl. 210-143.000.

Davis, G. Jerry; and Mellinger, John C., to Maytag Company, The. Door latch for appliance. 4,623,179, Cl. 292-201.000.

Davis, Geoffrey; and Beal, Graham K., to British Steel Corporation. Clamping devices for spring assemblies. 4,623,133, Cl. 267-53.000.

Davis, Kirk E.; and DiBiase, Stephen A., to Lubrizol Corporation, The. Sulfur-containing compositions, and additive concentrates and lubricating oils containing same. 4,623,473, Cl. 252-33.600.

Davis, Milton W., Jr.: *See—*
Ozyagcilar, Mehmet N.; and Davis, Milton W., Jr., 4,623,532, Cl. 423-362.000.

Davis, Robert E.: *See—*
Doud, Wilbur O.; Davis, Robert E.; and Sawyer, Fred R., 4,623,374, Cl. 65-83.000.

Dayton, David: *See—*
Van der Linde, John R.; Szep, James P.; and Dayton, David, 4,623,958, Cl. 362-267.000.

Deal, Samuel B.; and Bartch, Donald W., to RCA Corporation. CRT with carbon-particle layer on a metallized viewing screen. 4,623,820, Cl. 313-466.000.

Deans, John J. F.: *See—*
Black, David A.; and Deans, John J. F., 4,622,784, Cl. 52-2.000.

Dearman, Timothy C. Pipe clamp. 4,623,085, Cl. 228-49.300.

Dearwester, Donald D., to Procter & Gamble Company, The. Dual dispensing mode carton and concomitant package. 4,623,074, Cl. 221-48.000.

Deavenport, Joe E.: *See—*
Scolari, John E.; Warner, Robert T.; and Deavenport, Joe E., 4,623,824, Cl. 315-241.00R.

DeBona, Bruce T.: *See—*
Hsiue, Eric S.; Ziatyk, Daniel; Stone, George R.; and DeBona, Bruce T., 4,623,577, Cl. 428-209.000.

Debrabant, Francois: *See—*
Allio, Roland; Del Fabbro, Gilbert; Debrabant, Francois; and Gillet, Francois, 4,623,140, Cl. 271-305.000.

Deere & Company: *See—*
Kumar, Viraraghavan S., 4,623,118, Cl. 251-30.010.

Degoix, Bernard; and Boussemaer, Daniel, to Les Cables de Lyon. Method and apparatus for manufacturing an optical fiber cable. 4,623,495, Cl. 264-1.500.

Degremont: *See—*
Savall, Vincent, 4,623,466, Cl. 210-634.000.

De Guglielmo, Pascal: *See—*
Magoni, Pascal; Bernard, Jean-Pierre; and De Guglielmo, Pascal, 4,622,893, Cl. 100-2.000.

DeGuiseppi, David T.; and Gonzales, Gilda C., to Dow Chemical Company, The. Urethane-modified polyisocyanurate rigid foam. 4,623,673, Cl. 521-110.000.

Delavan Inc.: *See—*
Wayne, Alex; Bintner, Dennis W.; and Bartel, Mark H., 4,623,277, Cl. 403-314.000.

Del Fabbro, Gilbert: *See—*
Allio, Roland; Del Fabbro, Gilbert; Debrabant, Francois; and Gillet, Francois, 4,623,140, Cl. 271-305.000.

Delmonico, John A., to Old Western Paints, Inc. Insulating paint for interior and exterior of buildings and method of making same. 4,623,390, Cl. 106-15.050.

Delpretti, Roger: *See—*
Fery, Philippe; and Delpretti, Roger, 4,623,772, Cl. 219-69.00M.

Dembicki, Dennis R.; Coan, Frederick L.; Glassford, Craig L.; and Overman, Dana C., to Dow Chemical Company, The. Use of membranes for ethylene recovery in polymerization processes. 4,623,704, Cl. 526-68.000.

Demircan, Bayramali: *See—*
Kussel, Willy; and Demircan, Bayramali, 4,622,998, Cl. 137-596.150.

Dempsey, William J.; Brunken, Walter R.; and Mailhiot, Alfred F., Jr., to Addison Machine Engineering Inc. Apparatus for removing burrs from welded material. 4,622,729, Cl. 29-33.00A.

Denes, Laszlo : *See—*
Bernath, Gabor; Kobor, Jeno ; Folop, Ferenc; Sohar, Pal; Perjesi, Pal; Ezer, Elemer; Hajos, Gyorgy; Palosi, Eva; Denes, Laszlo ; and Szporny, Laszlo , 4,623,647, Cl. 514-228.000.

Denis Ferranti Meters, Ltd.: *See—*
Norman, Geoffrey B., 4,622,990, Cl. 137-315.000.

Denker, Stanley D. Shoe cleat engagement bicycle pedal. 4,622,863, Cl. 74-594.600.

Denner, Wolf J.; Biernacki, Andreas; and Breitschwerdt, Gunter, to Waldner Laboreinrichtungen. Hoods for the extraction of gases, vapors and suspended material. 4,622,888, Cl. 98-115.300.

Denz, Helmut; Etzold, Peter; Groschel, Wolfgang; Kaiser, Gunther; Kraemer, Heinz; Nitschke, Werner; and Zechnall, Martin, to Robert Bosch GmbH. Method and apparatus for self-monitoring of microcomputer-controlled network devices in particular in motor vehicles. 4,623,974, Cl. 364-551.000.

Derbyshire, Rodney L.; and Busch, Paul F., to Metcal, Inc. Heat treatment with an autoregulating heater. 4,623,401, Cl. 148-13.000.

Derouane, Eric G.; Valyocsik, Ernest W.; and von Ballmoos, Roland, to Mobil Oil Corporation. Crystalline silicophosphoaluminate (MCM-10). 4,623,527, Cl. 423-306.000.

Deschler, Ulrich; Buder, Wolfgang; Kleinschmit, Peter; and Michel, Rudolf. N,N'- and N,N',N'-substituted silylureas and process for their production. 4,623,740, Cl. 556-421.000.

Desfontaines, Guy, to Framatome & CIE. Device for fixing a fuel array to the lower core-supporting plate in a nuclear reactor. 4,623,512, Cl. 376-364.000.

Dettelbach, Alfred: *See—*
Binder, Werner; Gresser, Gerhard; and Dettelbach, Alfred, 4,622,748, Cl. 30-380.000.

Deutsch, Armin; and Ruyten, Henricus M., to U.S. Philips Corporation. Automatic insertion/ejection linkage for a magnetic-tape-cassette apparatus. 4,623,945, Cl. 360-96.500.

Deutsche Gesellschaft: *See—*
Schroder, Gunter, 4,623,294, Cl. 414-590.000.

Deutsche ITT Industries GmbH: *See—*
Mehrgardt, Soenke, 4,623,873, Cl. 340-347.0SY.

Deville, Terry W.: *See—*
Timpe, Gerald M.; and Deville, Terry W., 4,622,976, Cl. 128-654.000.

DeVito, Joseph: *See—*
Tendrup, Donald; and DeVito, Joseph, 4,623,079, Cl. 223-85.000.

deVries, Roelof: *See—*
Cramer, Clarence W.; and deVries, Roelof, 4,622,891, Cl. 99-450.400.

De Vries, Vern G., to American Cyanamid Company. Antiatherosclerotic ureas and thioureas. 4,623,662, Cl. 514-596.000.

de Wied, David, to Akzo N.V. Peptides. 4,623,640, Cl. 514-18.000.

Deysarkar, Asoke K.: *See—*
Clampitt, Bert H.; Deysarkar, Asoke K.; and Westmoreland, Thomas D., Jr., 4,623,447, Cl. 208-187.000.

Dhein, Rolf: *See—*
von Bittera, Miklos; Dhein, Rolf; Meyer, Rolf-Volker; and Rupp, Roland, 4,623,346, Cl. 604-896.000.
Diamalt Aktiengesellschaft: *See—*
Maeke, Siegfried; Bauer, Adolf; Vogt, Hubert; and Wolf, Helmut, 4,623,730, Cl. 548-308.000.
DiBiase, Stephen A.: *See—*
Davis, Kirk E.; and DiBiase, Stephen A., 4,623,473, Cl. 252-33.600.
Dictaphone Corporation: *See—*
Paulson, Robert T.; Sevitsky, Gary S.; and D'Agosto, Nicholas A., III, 4,623,988, Cl. 364-900.000.
Diehl GmbH & Co.: *See—*
Misoph, Helmut, 4,623,107, Cl. 244-3.220.
Diesel Kiki Co., Ltd.: *See—*
Arai, Kenji; and Kurihara, Kazumasa, 4,623,798, Cl. 307-117.000.
Nozaki, Shinya; Yamada, Keiichi; and Kushida, Takeo, 4,622,942, Cl. 123-446.000.
Dietz, Frank J.: *See—*
Bahnman, Reuben; and Dietz, Frank J., 4,622,806, Cl. 56-16.200.
Diffenderfer, Harold R.; and Rowley, George S., to Neapco, Inc. Method for drawing telescoping tubes for torque transmission. 4,622,840, Cl. 72-283.000.
Digital Equipment Corporation: *See—*
Wolrich, Gilbert; McLellan, Edward J.; Yodlowski, Robert; and Dobberpuhl, Daniel, 4,623,981, Cl. 364-736.000.
Discovision Associates: *See—*
Efron, Edward; McPherson, James O.; and Kim, Young B., 4,623,837, Cl. 324-77.00R.
Distel, Robert; Groner, Hans; and Kugland, Peter, to Bayerische Motoren Werke AG. Burner and method for removal of accumulated soot on a soot filter in internal combustion engines. 4,622,811, Cl. 60-303.000.
Diversified Products Corporation: *See—*
Rockwell, Gary, 4,623,144, Cl. 272-134.000.
Dobberpuhl, Daniel: *See—*
Wolrich, Gilbert; McLellan, Edward J.; Yodlowski, Robert; and Dobberpuhl, Daniel, 4,623,981, Cl. 364-736.000.
Dobhan, Herbert: *See—*
Olschewski, Armin; Bauer, Bernhard; Leuner, Hilmar; and Dobhan, Herbert, 4,623,270, Cl. 384-576.000.
Dr. Ing. h.c.F. Porsche Aktiengesellschaft: *See—*
Rutschmann, Erwin; and Theilemann, Ludwig, 4,622,926, Cl. 123-52.0MB.
Dr. Ing. Rudolf Hell GmbH: *See—*
Hoffrichter, Ingo; and Jung, Eggert, 4,623,973, Cl. 364-526.000.
Doherty, James B.; Ashe, Bonnie M.; Finke, Paul E.; Firestone, Raymond A.; Shah, Shrenik K.; and Zimmerman, Morris, to Merck & Co., Inc. Substituted cephalosporin sulfoxides as anti-inflammatory and antidegenerative agents. 4,623,645, Cl. 514-200.000.
Doi, Terumasa, to Sumitomo Rubber Industries, Ltd. Flat belt type testing apparatus for measuring the cornering characteristics of a tire. 4,622,848, Cl. 73-146.000.
Dombay, Zsolt: *See—*
Grega nee Toth, Erzsebet; Nagy, Jozsef; Tarpai, Gyula; Lorik, Erno ; Toth, Istvan; Pasztor, Karoly; Bartfai nee Harsanyi, Zsuzsanna; Beres, Ilona; Tasi, Laszlo ; Urszin nee Simon, Eszter; Dombay, Zsolt; Bajusz nee Olah, Judit; and Balogh, Karoly, 4,623,383, Cl. 71-100.000.
Donaldson Company, Inc.: *See—*
Gillingham, Gary R., 4,622,995, Cl. 137-590.000.
Gillingham, Gary R., 4,622,996, Cl. 137-590.000.
Donley, Harold E.; and Belli, Cheryl E., to PPG Industries, Inc. Electroconductive silver composition. 4,623,389, Cl. 106-1.140.
Donnelly, James F., to Jamesbury Corporation. Butterfly valve seat. 4,623,121, Cl. 251-306.000.
Dorer, Casper J., Jr.; and Hayashi, Katsumi, to Lubrizol Corporation, The. Hydrocarbyl substituted carboxylic acylating agent derivative containing combinations, and fuels containing same. 4,623,684, Cl. 524-96.000.
Dornier System GmbH: *See—*
Forssmann, Bernd; and Chaussy, Christian, 4,622,969, Cl. 128-328.000.
Dorow, Joachim; and Bleckmann, Gerhard, to BASF Aktiengesellschaft. Swivel frame apparatus for lining a wrap-around plate about a form cylinder. 4,622,895, Cl. 101-153.000.
Doryokuro Kakunenryo Kaihatsu Jigyodan: *See—*
Onishi, Koichi; and Suganuma, Takashi, 4,623,250, Cl. 356-316.000.
Dotti, Enrico; and Sala, Angelo, to Societa' Cavi Pirelli S.p.A. Method for joining two aluminum conductors of electric cables and the joint thus obtained. 4,623,213, Cl. 339-276.00R.
Doud, Wilbur O.; Davis, Robert E.; and Sawyer, Fred R., to Ball Corporation. Cooling system for parison plunger. 4,623,374, Cl. 65-83.000.
Douthart, Robert H.: *See—*
Smith, Howard W.; and Douthart, Robert H., 4,623,829, Cl. 318-793.000.
Dove , Georges: *See—*
Giddey, Claude; and Dove , Georges, 4,623,551, Cl. 426-564.000.
Dow Chemical Company, The: *See—*
Bedell, Stephen A.; Coleman, William M., III; and Howell, William R., Jr., 4,623,707, Cl. 526-142.000.
Cohen, Arie, 4,623,502, Cl. 264-176.100.
DeGuiseppi, David T.; and Gonzales, Gilda C., 4,623,673, Cl. 521-110.000.
Dembicki, Dennis R.; Coan, Frederick L.; Glassford, Craig L.; and Overman, Dana C., 4,623,704, Cl. 526-68.000.
Flaugher, Ronald R., 4,623,056, Cl. 193-23.000.
Massingill, John L., 4,623,701, Cl. 525-523.000.
Moore, Eugene R.; and Lefevre, Norman A., 4,623,678, Cl. 523-335.000.
Park, Chung P., 4,623,671, Cl. 521-92.000.
Timm, Edward E.; and Leng, Douglas E., 4,623,706, Cl. 526-88.000.
Dow Corning Corporation: *See—*
Buchroeder, Richard A.; Palmer, Eric M.; and Sukhman, Yefim P., 4,623,776, Cl. 219-121.0LG.
Keil, Joseph W., 4,623,694, Cl. 524-731.000.
Dowell Schlumberger Incorporated: *See—*
Frenier, Wayne W., 4,623,399, Cl. 134-3.000.
Drabek, Jozef: *See—*
Kristiansen, Odd; Drabek, Jozef; and Fluck, Victor, 4,623,642, Cl. 514-84.000.
Dragerwerk AG: *See—*
van der Smissen, Carl-Ernst, 4,623,637, Cl. 502-333.000.
Draper, Robert; Silvestri, George J., Jr.; and Hargrove, Homer G., to Westinghouse Electric Corp. Steam turbine exhaust pipe erosion prevention system. 4,622,819, Cl. 60-657.000.
Dresser Industries, Inc.: *See—*
Cametti, Richard J.; and Mitton, Rodney A., 4,622,860, Cl. 74-448.000.
Fertl, Walter H., 4,622,849, Cl. 73-152.000.
Drew, John H.: *See—*
Winter, Walter W.; Gothard, Steven E.; and Drew, John H., 4,623,761, Cl. 379-84.000.
Drexler Technology Corporation: *See—*
Haddock, Richard; and Lichtenstein, Terri, 4,623,784, Cl. 250-201.000.
Drobish, James L.; Spletzer, Eldon G.; and Thompson, Hugh A., to Procter & Gamble Company, The. Drainage and infusion catheters having a capillary sleeve forming a reservoir for a fluid antimicrobial agent. 4,623,329, Cl. 604-29.000.
Drobny, Vladimir F., to Tektronix, Inc. Schottky barrier diodes. 4,622,736, Cl. 29-571.000.
Drutchas, Gilbert H.; and Suttkus, David J., to TRW Inc. Control apparatus for a steering system. 4,623,031, Cl. 180-148.000.
Dubovitsky, Fedor I.: *See—*
Maximov, Jury M.; Ziatdinov, Mansur K.; Kolmakov, Anatoly D.; Raskolenko, Larisa G.; Merzhanov, Alexandr G.; Borovinskaya, Inna P.; and Dubovitsky, Fedor I., 4,623,402, Cl. 148-20.300.
Dubreuil, Luc T.; Pouliot, Gaston D.; Cote, Gerard G.; Larouche, Rejean; and Zuber, Bretislav P., to Northern Telecom Limited. Method of deforming a cable. 4,622,741, Cl. 29-858.000.
Dudek, Josef; and Adamek, Stanislav, to Ceskoslovenska akademie ved. Universal measuring gauge for geological structures. 4,622,750, Cl. 33-1.00H.
Duembgen, Gerd: *See—*
Broecker, Franz J.; Duembgen, Gerd; Pies, Wolfgang; Schlichtharle, Gottfried; and Weber, Guenter, 4,623,668, Cl. 518-709.000.
Dufresne, Daniel: *See—*
Dufresne, Michel; Champagne, Jean-Paul; Dufresne, Daniel; Scott, Pierre; and Courtney, John, 4,623,920, Cl. 358-122.000.
Dufresne, Michel; Champagne, Jean-Paul; Dufresne, Daniel; Scott, Pierre; and Courtney, John, to Le Groupe Videotron LTEE. Cable network data transmission system. 4,623,920, Cl. 358-122.000.
Duma AB: *See—*
Eriksson, Marja, 4,623,344, Cl. 604-407.000.
Dunkle, Donald H.: *See—*
Bambauer, Boyd R.; Dunkle, Donald H.; and Loscutoff, Steve, 4,623,029, Cl. 177-137.000.
Du Pont de Nemours, E. I., and Company: *See—*
Cope, Charles S., 4,623,487, Cl. 260-408.000.
Huybrechts, Jozef T.; and Timmerman, August T., 4,623,481, Cl. 252-511.000.
Huybrechts, Jozef T.; and McKeen, Lawrence W., 4,623,565, Cl. 428-35.000.
DuPont, Preston S.; Ritter, Robert E.; and Stafford, John P., to Hughes Aircraft Company. Electrically conductive composite structure. 4,623,951, Cl. 361-218.000.
Dupre, Jacques, to Societe DUPRE. Security clamp for cables. 4,622,724, Cl. 24-130.000.
Durocher, Donald F.: *See—*
Mathews, John H.; Durocher, Donald F.; and Hampl, Vladimir, Jr., 4,622,983, Cl. 131-365.000.
Durrr, Dieter; and Tobler, Hans, to Ciba-Geigy Corporation. Gametocidal pyridazinylcarboxylic acid derivatives. 4,623,378, Cl. 71-92.000.
Dutch, Geoffrey C.; and Dutch, Trevor K., to Costanza Pty. Limited. Fencing and like structures. 4,623,128, Cl. 256-65.000.
Dutch, Trevor K.: *See—*
Dutch, Geoffrey C.; and Dutch, Trevor K., 4,623,128, Cl. 256-65.000.
Duwel, Edward C.: *See—*
Soderberg, John H.; Jones, Howell A.; Eckert, Alton B.; Duwel, Edward C.; and Nambudiri, Easwaran C. N., 4,623,987, Cl. 364-900.000.
Dye, James M.: *See—*
Mabrey, David W.; and Dye, James M., 4,623,696, Cl. 525-33.000.
E. R. Squibb & Sons, Inc.: *See—*
Natarajan, Sesha I.; and Gordon, Eric M., 4,623,729, Cl. 546-256.000.
E-Systems, Inc.: *See—*
Livingston, William D., 4,623,886, Cl. 340-825.500.
Patterson, Patricia L., 4,623,999, Cl. 371-37.000.

Earl, Gregory. Fuel evaporation apparatus and method. 4,622,944, Cl. 123-557.000.
Eastman, James E.: *See—*
Katt, Judy L.; Moore, Carl O.; and Eastman, James E., 4,623,549, Cl. 426-548.000.
Eastman Kodak Company: *See—*
Brown, Mark E.; Gamble, Bruce W.; Piatt, Michael J.; and Vandagriff, Randy D., 4,623,897, Cl. 346-75.000.
Darnell, William R.; and Jackson, Winston J., Jr., 4,623,675, Cl. 521-180.000.
Garris, Vladimir A., 4,622,914, Cl. 118-77.000.
Johnson, David A.; and Shroyer, Richard A., 4,623,929, Cl. 358-214.000.
Eaton Corporation: *See—*
Calviello, Joseph A., 4,624,004, Cl. 357-22.000.
Kleinhagen, Charles W., Jr., 4,623,047, Cl. 188-196.0BA.
Eaton, Homer L.; and Schmidt, Joe, to MTS Vektronics Corporation. Event scanning. 4,623,797, Cl. 250-560.000.
Ebata, Yoshikazu, to Janome Sewing Machine Industry Co., Ltd. Paper transporting mechanism of a printer. 4,623,139, Cl. 271-272.000.
Ebey, Edward, to Fulton Manufacturing Corporation. Swivel jack. 4,623,125, Cl. 254-420.000.
Ebisawa, Hiroo: *See—*
Fujimori, Yoshitsugu; Adachi, Ryouhei; Ebisawa, Hiroo; Kikuchi, Nobuo; and Wada, Tsuneyuki, 4,623,190, Cl. 296-198.000.
Eckert, Alton B.: *See—*
Soderberg, John H.; Jones, Howell A.; Eckert, Alton B.; Duwel, Edward C.; and Nambudiri, Easwaran C. N., 4,623,987, Cl. 364-900.000.
Eckhardt, Rudolf; Neuendorf, Hans-Christoph; and Freilingsdorf, Horst, to Flachglas Aktiengesellschaft. Drilling machine especially for drilling glass. 4,623,287, Cl. 408-206.000.
Economedica Sweden AB: *See—*
Persson, Peter, 4,622,968, Cl. 128-305.300.
Ed. Zublin Aktiengesellschaft: *See—*
Nussbaumer, Manfred; and van Lith, Theo, 4,623,198, Cl. 299-10.000.
Edwards, Arthur J., to Motorola, Inc. Alternator system multifunction fault detector. 4,623,833, Cl. 322-28.000.
Efron, Edward; McPherson, James O.; and Kim, Young B., to Discovision Associates. Audio/video quality monitoring system. 4,623,837, Cl. 324-77.00R.
Egawa, Takeshi: *See—*
Taniguchi, Nobuyuki; Ishikawa, Norio; Akada, Yasuaki; Egawa, Takeshi; and Kawamura, Kunio, 4,623,238, Cl. 354-406.000.
Ehlert, Mark C.: *See—*
Moon, John J., Jr.; Surjaatmadja, Jim B.; and Ehlert, Mark C., 4,622,846, Cl. 73-19.000.
Ehrgott, Frederick J., Jr.: *See—*
Glamkowski, Edward J.; and Ehrgott, Frederick J., Jr., 4,623,657, Cl. 514-462.000.
Eirich, Hubert: *See—*
Eirich, Paul; Eirich, Walter; Eirich, Hubert; and Goldschmidt, Erwin, 4,624,003, Cl. 373-120.000.
Eirich, Paul; Eirich, Walter; Eirich, Hubert; and Goldschmidt, Erwin, to Eirich, Paul; Eirich, Walter; and Eirich, Hubert. Apparatus for heating electrically conductive bulk materials. 4,624,003, Cl. 373-120.000.
Eirich, Walter: *See—*
Eirich, Paul; Eirich, Walter; Eirich, Hubert; and Goldschmidt, Erwin, 4,624,003, Cl. 373-120.000.
Ejima, Yasuyuki: *See—*
Jabami, Ryozo; Hamaguchi, Akira; Matsuda, Shigeru; and Ejima, Yasuyuki, 4,622,827, Cl. 62-158.000.
Ekstrom Industries: *See—*
Jones, David W.; Langdon, Albert K.; Pruehs, Allen V.; and Robinson, Darrell A., 4,622,753, Cl. 33-189.000.
Ekstrom, Michael P.: *See—*
Locke, Stanley; Sinha, Bikash K.; and Ekstrom, Michael P., 4,622,854, Cl. 73-703.000.
El Paso Hydrocarbons Company: *See—*
Mehra, Yuv R., 4,623,371, Cl. 62-17.000.
Eleanor Roosevelt Institute for Cancer Research, Inc.: *See—*
Anderson, David W., 4,623,622, Cl. 435-68.000.
Electricite de France: *See—*
Gautier, Daniel M.; and Lagoutte, Andre, 4,623,494, Cl. 261-161.000.
Elford, Howard L.: *See—*
van't Riet, Bartholomeus; Elford, Howard L.; and Wampler, Galen L., 4,623,659, Cl. 514-508.000.
Elikan, Edward: *See—*
Marchetti, Joseph R.; Sanjana, Zal N.; and Elikan, Edward, 4,623,578, Cl. 428-209.000.
Elitex Koncern Textilniho Strojirenstvi: *See—*
Svaty, Vladimir, 4,623,005, Cl. 139-452.000.
Svaty, Vladimir, 4,623,006, Cl. 139-452.000.
Elliot, James I.; Timbers, Gordon E.; Modler, H. Wayne; and Allen, Robert W., to Candian Patents and Development Limited. Production of purified porcine immunoglobulins. 4,623,541, Cl. 424-85.000.
Elmore, Jimmy D.: *See—*
Azarnia, Farah D.; and Elmore, Jimmy D., 4,623,680, Cl. 523-412.000.
Elms, Robert T.: *See—*
Salowe, Seymour; Elms, Robert T.; and Johnson, Richard A., 4,623,949, Cl. 361-63.000.
Elmwood Sensors, Inc.: *See—*
Hutchison, Samuel A., 4,623,866, Cl. 337-380.000.
Emery, Clayton N.; and Harper, Howard M., to Brown & Williamson Tobacco Corporation. System and process for sorting and opening packages. 4,622,875, Cl. 83-80.000.
Emhart Industries, Inc.: *See—*
Petre, Mark L.; and Lock, Michael W., 4,623,764, Cl. 200-38.00R.
Empi, Inc.: *See—*
Agarwala, Poonam, 4,622,973, Cl. 128-421.000.
Emura, Noriaki: *See—*
Shintani, Takashi; Emura, Noriaki; Tanaka, Tetsuo; and Oda, Yasuhiro, 4,623,689, Cl. 524-457.000.
Enami, Ken: *See—*
Machida, Toyotaka; and Enami, Ken, 4,623,939, Cl. 358-342.000.
Enco Miljo Forsaljning AB: *See—*
Kjell, Sven-Inge, 4,622,731, Cl. 29-159.300.
Enein, Mohamed, to Hazeltine Corporation. Dynamic limiter for MLS receiver. 4,623,892, Cl. 342-411.000.
Energy Conversion Devices, Inc.: *See—*
Sapru, Krishna; Reichman, Benjamin; Reger, Arie; and Ovshinsky, Stanford R., 4,623,597, Cl. 429-101.000.
Energy International, Inc.: *See—*
Bernstein, Samuel; and Ushimaru, Kenji, 4,622,757, Cl. 34-1.000.
Eng, Wing K., to AT&T Bell Laboratories. Bias power source energized by tertiary winding including hysteresis characteristic for disabling the power switch when a minimum base drive signal can no longer be maintained. 4,623,960, Cl. 363-21.000.
Engel, Herman J. Electrical adapter for use in connection with fluorescent lamps. 4,623,823, Cl. 315-58.000.
Engelmann, Alfred: *See—*
Bumuller, Lothar; Engelmann, Alfred; Kille, Franz; Maier, Alfred; Scharf, Otto; and Worner, Fritz, 4,622,728, Cl. 26-18.500.
Engelmann, Reinhart W. H.: *See—*
Ackley, Donald E.; Engelmann, Reinhart W. H.; and Inouye, Teruko K., 4,623,427, Cl. 156-647.000.
Engler, Phillip V.: *See—*
Lewis, Jean D.; Goldschmidt, Willfred; Coiro, Donald; and Engler, Phillip V., 4,623,235, Cl. 354-312.000.
English Clays Lovering Pochin & Company, Ltd.: *See—*
Goodman, Howard; and Fugler, Andrew R., 4,623,398, Cl. 106-308.00N.
English Electric Valve Company Limited: *See—*
Nixon, Ralph D., 4,623,882, Cl. 340-760.000.
Enhancer R & D: *See—*
Timpe, Gerald M.; and Deville, Terry W., 4,622,976, Cl. 128-654.000.
Enjo, Naonori; and Harada, Yuhkow, to Daikin Kogyo Co., Ltd. Fluorochlorohydrocarbon compositions. 4,623,475, Cl. 252-68.000.
Equipements Automobiles Marchall: *See—*
Wattier, Maurice F., 4,622,711, Cl. 15-250.230.
Erhardt, Paul W.; and Matier, William L., to American Hospital Supply Corporation. Esters of thiadiazole oxypropanolaine derivatives and pharmaceutical uses. 4,623,652, Cl. 514-326.000.
Erickson, Kenneth W.; and Gilliland, John H., to Square D Company. Remote control circuit breaker. 4,623,859, Cl. 335-14.000.
Eriksson, Marja, to Duma AB. Dosing means for a hypodermic syringe. 4,623,344, Cl. 604-407.000.
Eriksson, Mikael: *See—*
Anderberg, Bengt; and Eriksson, Mikael, 4,623,847, Cl. 328-234.000.
Esashi, Kiyoyuki: *See—*
Masumoto, Tsuyoshi; Esashi, Kiyoyuki; and Nose, Masateru, 4,623,387, Cl. 420-41.000.
Eschner, Axel: *See—*
Bruckner, Raimund; Eschner, Axel; and Leupold, Hermann, 4,623,130, Cl. 266-271.000.
Esselte Pendaflex Corporation: *See—*
Relson, Morris, 4,623,569, Cl. 428-42.000.
Eszakmagyarorszagi Vegyimuvek: *See—*
Grega nee Toth, Erzsebet; Nagy, Jozsef; Tarpai, Gyula; Lorik, Erno ; Toth, Istvan; Pasztor, Karoly; Bartfai nee Harsanyi, Zsuzsanna; Beres, Ilona; Tasi, Laszlo ; Urszin nee Simon, Eszter; Dombay, Zsolt; Bajusz nee Olah, Judit; and Balogh, Karoly, 4,623,383, Cl. 71-100.000.
Etablissements Ruggieri: *See—*
Robinet, Jean, 4,623,520, Cl. 422-126.000.
ETD Technology, Inc.: *See—*
Schramm, Charles H., 4,622,917, Cl. 118-696.000.
Ethyl Corporation: *See—*
Sanders, Robert N.; and Laurent, Sebastian M., 4,623,529, Cl. 423-328.000.
Zaweski, Edward F.; and Niebylski, Leonard M., 4,623,360, Cl. 44-57.000.
Zaweski, Edward F.; and Niebylski, Leonard M., 4,623,361, Cl. 44-57.000.
Zaweski, Edward F.; and Niebylski, Leonard M., 4,623,362, Cl. 44-57.000.
Zaweski, Edward F.; and Niebylski, Leonard M., 4,623,363, Cl. 44-57.000.
Etzold, Peter: *See—*
Denz, Helmut; Etzold, Peter; Groschel, Wolfgang; Kaiser, Gunther; Kraemer, Heinz; Nitschke, Werner; and Zechnall, Martin, 4,623,974, Cl. 364-551.000.
Eurotechnik (U. K.) Limited: *See—*
Davenport, James H., 4,623,453, Cl. 210-143.000.

Evans, Anthony C., to Kelsey-Hayes Company. Automatic brake adjusting mechanism. 4,623,045, Cl. 188-79.50P.

Evans, Morris L.: *See*—
Jacob, Lutz E.; Lepert, Andre ; and Evans, Morris L., 4,623,698, Cl. 525-221.000.

Evers, William J.; Stork, Gilbert; Mookherjee, Braja D.; and Heinsohn, Howard H., Jr., to International Flavors & Fragrances Inc. Synthesis of triconjugated dienones and novel intermediates used in said process. 4,623,749, Cl. 560-262.000.

Ex-Cell-O Corporation: *See*—
Anestis, Emmanuel; and Wakefield, Frederick I., 4,623,503, Cl. 264-302.000.

Exxon Production Research Co.: *See*—
Chakrabarty, Tapan; and Thomas, Ray, 4,623,022, Cl. 166-310.000.

Exxon Research & Engineering Co.: *See*—
Irani, Cyrus A.; Cozewith, Charles; and Kasegrande, Stephen S., 4,623,712, Cl. 528-498.000.
Jacob, Lutz E.; Lepert, Andre ; and Evans, Morris L., 4,623,698, Cl. 525-221.000.

Eyraud, Charles: *See*—
Barberi, Paul; Bergez, Pierre; Brun, Maurice; Chevalier, Michel; Eyraud, Charles; and Quinson, Jean-Francois, 4,623,263, Cl. 374-33.000.

Ezer, Elemer: *See*—
Bernath, Gabor; Kobor, Jeno ; Folop, Ferenc; Sohar, Pal; Perjesi, Pal; Ezer, Elemer; Hajos, Gyorgy; Palosi, Eva; Denes, Laszlo ; and Szporny, Laszlo , 4,623,647, Cl. 514-228.000.

Ezis, Andre: *See*—
Beckwith, Elaine C.; and Ezis, Andre, 4,623,498, Cl. 264-65.000.

Ezrielev, Robert I.; Kamen, Melvin E.; and Petcen, Donald H., to Coburn Optical Industries, Inc. Prepolymerization of monomer compositions containing diethylene glycol bis(allyl carbonate). 4,623,708, Cl. 526-314.000.

Faber, Lawrence, to Modi Partnership. Computer system wherein control segment of information loads the task in the computer and data segment of the information executes the task loaded in the computer. 4,623,782, Cl. 235-379.000.

Fabriques de Tabac Reunies S.A.: *See*—
Gaisch, Helmut; Krasna, Beth; and Schulthess, Dieter, 4,622,982, Cl. 131-297.000.

Fabris, Mirko, to Ateliers de Constructions Electriques de Charleroi. Safety device for a nuclear fuel element loading mechanism. 4,623,509, Cl. 376-268.000.

Faessler, Fritz; and Stadler, Siegmund, to Giulini Chemie GmbH. Process for the production of precision castings. 4,623,014, Cl. 164-7.100.

Fairchild Semiconductor Corporation: *See*—
Cline, Ronald L.; and Campbell, John G., 4,623,802, Cl. 307-297.000.

Fakhrai, Mehdi. Surgical retractor for dissection of internal mammary artery. 4,622,955, Cl. 128-20.000.

Fanuc Ltd: *See*—
Sakamoto, Keiji; and Toyozawa, Yukio, 4,623,831, Cl. 318-799.000.

Farmitalia Carlo Erba S.p.A.: *See*—
Alpegiani, Marco; Bedeschi, Angelo; Foglio, Maurizio; Franceschi, Giovanni; and Perrone, Ettore, 4,623,643, Cl. 514-196.000.

Faucher, Jerome R.: *See*—
Buchan, William R.; Faucher, Jerome R.; and Cosby, John M., 4,623,241, Cl. 355-10.000.

Faust, Horst: *See*—
Kastl, Erna; Klenk, Ludwig; Faust, Horst; and Stenger, Karl, 4,623,566, Cl. 428-36.000.

Fazlin, Fazal A., to Advanced Plasma Systems Inc. Paired electrodes for plasma chambers. 4,623,441, Cl. 204-298.000.

Feather, Mitchell D., to AT&T Bell Laboratories. Alignment marks for fine-line device fabrication. 4,623,257, Cl. 356-401.000.

Feit, Fredric. Percutaneous sinus tract maintenance prosthesis. 4,623,348, Cl. 623-11.000.

Feldman, Donald W.: *See*—
Ryan, Frederick M.; and Feldman, Donald W., 4,622,845, Cl. 73-24.000.

Feldman, Steven; and Yeager, Marvin L., to AMP Incorporated. Watertight junction box. 4,623,753, Cl. 174-50.000.

Felton, Clinton D.; Gibson, Baylor D.; Jamison, Charles E.; McWhorter, William O.; and Serad, George A., to Celanese Corporation. Electret making process using corona discharge. 4,623,438, Cl. 204-168.000.

Ferguson, Arthur R., to Outboard Marine Corporation. Pivotal air induction for marine propulsion device. 4,623,313, Cl. 440-77.000.

Fernandes, Peter M.; and Lundblad, John L., to Miles Laboratories, Inc. Pasteurized therapeutically active protein compositions. 4,623,717, Cl. 530-380.000.

Fertl, Walter H., to Dresser Industries, Inc. Method and apparatus for determining characteristics of clay-bearing formations. 4,622,849, Cl. 73-152.000.

Fery, Philippe; and Delpretti, Roger, to Charmilles Technologies S.A. Apparatus and method for EDM polishing. 4,623,772, Cl. 219-69.00M.

Fetouh, Mohamed A., to General Motors Corp. Modular crank subassembly and built-up crankshaft therefor. 4,622,864, Cl. 74-597.000.

Fiberglas Canada Inc.: *See*—
Kucharska, Helena Z.; and Burton, Thomas M., 4,623,479, Cl. 252-350.000.

Fichte, Rudolf: *See*—
Hahn, Reinhard; Retelsdorf, Hans-Joachim; Fichte, Rudolf; and Sattelberger, Siegfried, 4,623,386, Cl. 75-10.180.

Fichtel & Sachs Industries, Inc.: *See*—
Smith, Lawther O., 4,623,132, Cl. 267-34.000.

Fieldhouse, John W.: *See*—
Hergenrother, William L.; Fieldhouse, John W.; and Halasa, Adel F., 4,623,525, Cl. 423-275.000.

Figgie International Inc.: *See*—
Ansite, William K., 4,622,963, Cl. 128-203.270.
Glenn, James W.; and Brown, Joseph C., 4,624,009, Cl. 381-43.000.

Finke, Paul E.: *See*—
Doherty, James B.; Ashe, Bonnie M.; Finke, Paul E.; Firestone, Raymond A.; Shah, Shrenik K.; and Zimmerman, Morris, 4,623,645, Cl. 514-200.000.

Finkel Outdoor Products, Inc.: *See*—
Redl, Stefan; and Killian, Edmund, 4,622,987, Cl. 135-20.00M.

Finn, Camphuysen, MacDonald, Schumacher: *See*—
Finn, Charles A., 4,622,707, Cl. 7-158.000.

Finn, Charles A., to Finn, Camphuysen, MacDonald, Schumacher. Survival knives with grapple capability. 4,622,707, Cl. 7-158.000.

Finney, Roy P., to Medical Engineering Corporation. Penile implant with accumulator. 4,622,958, Cl. 128-79.000.

Firestone, Raymond A.: *See*—
Doherty, James B.; Ashe, Bonnie M.; Finke, Paul E.; Firestone, Raymond A.; Shah, Shrenik K.; and Zimmerman, Morris, 4,623,645, Cl. 514-200.000.

Firestone Tire & Rubber Co., The: *See*—
Beinor, Robert T.; and Cole, William M., 4,623,713, Cl. 528-930.000.
Hergenrother, William L.; Fieldhouse, John W.; and Halasa, Adel F., 4,623,525, Cl. 423-275.000.
Weitzenhof, David A.; and Sayre, Charles F., 4,623,162, Cl. 280-687.000.

Firmenich SA: *See*—
Schulte-Elte, Karl-Heinrich; Ohloff, Gunther; Muller, Bernard L.; and Giersch, Wolfgang K., 4,623,750, Cl. 568-822.000.

Fisher & Paykel Limited: *See*—
Gaelic, Christopher J., 4,622,708, Cl. 8-158.000.

Fitzgibbon, Jeremiah J., to Standard Oil Proppants Company. Use of uncalcined/partially calcined ingredients in the manufacture of sintered pellets useful for gas and oil well proppants. 4,623,630, Cl. 501-127.000.

Flachglas AG: *See*—
Irrlitz, Hans U.; Kick, Werner; and Sommer, Hans, 4,623,572, Cl. 428-90.000.

Flachglas Aktiengesellschaft: *See*—
Eckhardt, Rudolf; Neuendorf, Hans-Christoph; and Freilingsdorf, Horst, 4,623,287, Cl. 408-206.000.

Flanagan, Thomas P., to National Starch and Chemical Corporation. Remoistenable hot melt adhesives. 4,623,688, Cl. 524-377.000.

Flannigan, Bryan W. Tool used to manually lock and unlock a passenger door of a motor vehicle. 4,622,868, Cl. 81-15.900.

Flaugher, Ronald R., to Dow Chemical Company, The. Apparatus for distributing material flow. 4,623,056, Cl. 193-23.000.

Flaxington, David; Kay, James; and Miller, Steven M. Bearing system for a gas turbine. 4,622,818, Cl. 60-624.000.

Fleissner GmbH & Company: *See*—
Bumuller, Lothar; Engelmann, Alfred; Kille, Franz; Maier, Alfred; Scharf, Otto; and Worner, Fritz, 4,622,728, Cl. 26-18.500.

Fling, Russell T.; and Willis, Donald H., to RCA Corporation. Progressive scan video processor. 4,623,913, Cl. 358-11.000.

Flora, Laurence P.; and McCullough, Michael A., to Burroughs Corporation. Automatic signal delay adjustment apparatus. 4,623,805, Cl. 307-602.000.

Florig Equipment Company, Inc.: *See*—
Stluka, Eugene F., 4,623,197, Cl. 298-10.000.

Fluck, Victor: *See*—
Kristiansen, Odd; Drabek, Jozef; and Fluck, Victor, 4,623,642, Cl. 514-84.000.

Flynn, Stephen D., to O-Two Systems International Inc. Valve for breathing device. 4,622,964, Cl. 128-205.240.

FMC Corporation: *See*—
Baum, Jonathan S.; and Chen, Tsong M., 4,623,379, Cl. 71-92.000.
Green, Joseph, 4,623,687, Cl. 524-116.000.

Foglio, Maurizio: *See*—
Alpegiani, Marco; Bedeschi, Angelo; Foglio, Maurizio; Franceschi, Giovanni; and Perrone, Ettore, 4,623,643, Cl. 514-196.000.

Fojioka, Yoshitaka: *See*—
Kawamura, Ichiro; Fojioka, Yoshitaka; and Fujita, Makoto, 4,623,995, Cl. 369-77.200.

Folop, Ferenc: *See*—
Bernath, Gabor; Kobor, Jeno ; Folop, Ferenc; Sohar, Pal; Perjesi, Pal; Ezer, Elemer; Hajos, Gyorgy; Palosi, Eva; Denes, Laszlo ; and Szporny, Laszlo , 4,623,647, Cl. 514-228.000.

Ford Aerospace & Communications Corporation: *See*—
Montesanto, Ernest C.; and Martin, Joseph K., 4,623,858, Cl. 333-255.000.

Ford, Douglas L.; Kopp, Clinton V.; and Anderson, Eric W., to Memtec Limited. Formation of porous membranes. 4,623,463, Cl. 210-500.290.

Ford Motor Company: *See*—
Bachrach, Benjamin I.; Fuhrman, William J.; Hall, Daniel W.; and Hauser, Gotz S., 4,622,842, Cl. 72-467.000.
Barksdale, John S., 4,623,054, Cl. 192-53.00E.
Wickramasuriya, Damasius B., 4,622,931, Cl. 123-190.00A.

Ford, Ronald N., to Sciaky Bros., Inc. Method and apparatus for the welding of a ball and rod assembly. 4,623,774, Cl. 219-78.130.

Forkner, John F., to Melles Griot, Irvine Company. Anamorphic prism for beam shaping. 4,623,225, Cl. 350-421.000.

Forssmann, Bernd; and Chaussy, Christian, to Dornier System GmbH. Shock wave matching in therapeutic equipment. 4,622,969, Cl. 128-328.000.

Fortel, Inc.: *See—*
Batla, Masroor A.; and Hanscom, Bradford E., 4,623,758, Cl. 379-80.000.

Foseco Trading A.G.: *See—*
Roberts, Christopher T., 4,623,131, Cl. 266-280.000.

Foss, Dale R.; and Smith, John H., to United States of America, Air Force. One-step loading adapter. 4,623,295, Cl. 414-608.000.

Framatome & CIE.: *See—*
Desfontaines, Guy, 4,623,512, Cl. 376-364.000.
Gravelle, Alain, 4,623,507, Cl. 376-258.000.

France Bed Co., Ltd.: *See—*
Sasaki, Noboru; Iwata, Yasuji; and Mukai, Teruo, 4,622,839, Cl. 72-138.000.

Franceschi, Giovanni: *See—*
Alpegiani, Marco; Bedeschi, Angelo; Foglio, Maurizio; Franceschi, Giovanni; and Perrone, Ettore, 4,623,643, Cl. 514-196.000.

Franksen, Holger, to Siemens Aktiengesellschaft. Continuous-current switch for shorting at least one superconducting magnet winding. 4,623,769, Cl. 200-250.000.

Frantz, Gene A.: *See—*
Lin, Kun-Shan; Henderson, Alva E.; and Frantz, Gene A., 4,624,012, Cl. 381-51.000.

Franzen, Norman R.: *See—*
Janko, Bozidar; Franzen, Norman R.; and Bostwick, Myron A., Jr., 4,623,819, Cl. 313-432.000.

Fraser, Bruce A., to Carrier Corporation. Centrifugal contaminant separation for a lubricating system. 4,623,326, Cl. 494-34.000.

Freedom Industries, Inc.: *See—*
Schott, Roger A.; and Schott, Lawrence A., 4,623,954, Cl. 362-72.000.

Frei, Josef; Schweri, Hans; and Schnorf, Rudolf, to Organ-Fager Technology, N.V. Process for producing fibrous and granular materials from waste. 4,623,515, Cl. 422-1.000.

Freilingsdorf, Horst: *See—*
Eckhardt, Rudolf; Neuendorf, Hans-Christoph; and Freilingsdorf, Horst, 4,623,287, Cl. 408-206.000.

Frenier, Wayne W., to Dowell Schlumberger Incorporated. Solvent for removing iron oxide deposits. 4,623,399, Cl. 134-3.000.

Frerichs, Udo: *See—*
Seitz, Hans; Frerichs, Udo; Rach, Heinz-Dieter; and Spendel, Siegmund, 4,623,009, Cl. 152-380.000.

Freund Industrial Co., Ltd.: *See—*
Motoyama, Shimesu; Kurita, Kaoru; Sakashita, Shizuka; Takei, Narimichi; and Ohno, Shigeru, 4,623,098, Cl. 241-46.040.

Fried, Steven J. Fried-Grant rapid solution administration set with integral heat exchanger. 4,623,333, Cl. 604-80.000.

Friedman, Arthur S. Collapsible die-cut picture frame. 4,622,769, Cl. 40-152.100.

Fritts, David H.; and Leonard, John F., to United States of America, Air Force. Low shear nickel electrode. 4,623,600, Cl. 429-223.000.

Fritzsche, Harold L.: *See—*
Bisson, Donald K.; and Fritzsche, Harold L., 4,622,835, Cl. 72-16.000.

Froeschke, Reinhard, to Santrade Ltd. Device for extruding flowable substances. 4,623,307, Cl. 425-8.000.

Froncisz, Wojciech: *See—*
Mehdizadeh, Mehrdad; Froncisz, Wojciech; and Hyde, James S., 4,623,835, Cl. 324-58.50R.

Frosien, Jurgen; and Lischke, Burkhard, to Siemens Aktiengesellschaft. Sampling method for fast potential determination in electron beam mensuration. 4,623,836, Cl. 324-73.0PC.

Fudo, Eiji: *See—*
Fukuda, Michio; Okunishi, Toshifumi; and Fudo, Eiji, 4,622,733, Cl. 29-564.400.

Fugler, Andrew R.: *See—*
Goodman, Howard; and Fugler, Andrew R., 4,623,398, Cl. 106-308.00N.

Fuhrman, William J.: *See—*
Bachrach, Benjamin I.; Fuhrman, William J.; Hall, Daniel W.; and Hauser, Gotz S., 4,622,842, Cl. 72-467.000.

Fuji Electric Co., Ltd.: *See—*
Iijima, Toshiyuki; Kina, Hedeki; and Nanba, Masaharu, 4,623,243, Cl. 355-15.000.

Fuji Electric Corporate Research & Development Limited: *See—*
Iijima, Toshiyuki; Kina, Hedeki; and Nanba, Masaharu, 4,623,243, Cl. 355-15.000.
Kamoshita, Tomoyoshi, 4,623,596, Cl. 429-26.000.

Fuji Pack System Ltd.: *See—*
Takamura, Yoshiyuki, 4,622,802, Cl. 53-466.000.

Fuji Photo Film Co., Ltd.: *See—*
Ishizaki, Keiichi, 4,623,501, Cl. 264-171.000.
Kimura, Akinori; and Ohtsuka, Shuichi, 4,623,240, Cl. 355-10.000.
Kubota, Kazufumi; and Tokuda, Kanji, 4,623,246, Cl. 355-38.000.
Kuribayashi, Michio, 4,623,914, Cl. 358-14.000.
Nishikawa, Toshihiro; and Tanemura, Hatsumi, 4,623,612, Cl. 430-375.000.
Ohtsuka, Shuichi; and Kimura, Akinori, 4,622,915, Cl. 118-652.000.
Yokoyama, Shigeki; and Sekiguchi, Nobuhisa, 4,623,615, Cl. 430-527.000.
Yoneyama, Masakazu; Maekawa, Yukio; Yokoyama, Shigeki; and Yamanouchi, Junichi, 4,623,614, Cl. 430-523.000.

Fuji Photo Optical Co., Ltd.: *See—*
Arakawa, Satoshi; Toyota, Makoto; and Takeshita, Fumitaka, 4,622,954, Cl. 128-6.000.

Fuji Xerox Co., Ltd.: *See—*
Hosogai, Kozo, 4,623,607, Cl. 430-312.000.
Noguchi, Akio, 4,623,917, Cl. 358-80.000.
Sakamaki, Katsumi; and Fukagawa, Yasuyuki, 4,623,138, Cl. 271-170.000.

Fujii, Tooru, to Olympus Optical Co., Ltd. Compact zoom lens system having three lens groups. 4,623,226, Cl. 350-427.000.

Fujii, Tsutomu: *See—*
Fujimura, Tadato; and Fujii, Tsutomu, 4,623,840, Cl. 324-208.000.

Fujikawa, Masanori: *See—*
Takimoto, Hiroaki; Miyajiri, Tetsuo; Turita, Tamio; and Fujikawa, Masanori, 4,622,988, Cl. 137-209.000.

Fujimori, Yoshitsugu; Adachi, Ryouhei; Ebisawa, Hiroo; Kikuchi, Nobuo; and Wada, Tsuneyuki, to Honda Giken Kogyo Kabushiki Kaisha. Molded fender for automobiles. 4,623,190, Cl. 296-198.000.

Fujimura, Tadato; and Fujii, Tsutomu, to K.K. Tokyo Koki Seizosho; and Institute of Science and Engineering Service, Inc., part interest to each. Actuator. 4,623,840, Cl. 324-208.000.

Fujioka, Hironari: *See—*
Yamori, Tsunefumi; Okauchi, Shuki; and Fujioka, Hironari, 4,623,557, Cl. 427-44.000.

Fujita, Makoto: *See—*
Kawamura, Ichiro; Fojioka, Yoshitaka; and Fujita, Makoto, 4,623,995, Cl. 369-77.200.

Fujitsu Limited: *See—*
Matsumoto, Toshio; Kato, Motokazu; Sato, Kiyosumi; Mizushima, Yoshihiro; and Ohnishi, Katsumi, 4,623,962, Cl. 364-200.000.

Fujiwara, Kenichi; Hasada, Eiichi; and Sugi, Hikaru, to Nippondenso Co., Ltd. Air-conditioning and refrigerating system. 4,622,828, Cl. 62-200.000.

Fujiwara, Michio: *See—*
Kashiwamura, Kazuo; Yoshida, Tadahiro; Koda, Toshihide; and Fujiwara, Michio, 4,623,151, Cl. 277-24.000.

Fujiwara, Toshiaki, to Ryobi Ltd. Secondary battery quick-charging circuit. 4,623,832, Cl. 330-23.000.

Fukada, Tsuyoshi: *See—*
Itoh, Hiroshi; Ohmi, Shinya; Suzuki, Yasutoshi; Fukada, Tsuyoshi; and Hara, Kunihiko, 4,623,222, Cl. 350-331.00T.

Fukagawa, Yasuyuki: *See—*
Sakamaki, Katsumi; and Fukagawa, Yasuyuki, 4,623,138, Cl. 271-170.000.

Fukuda, Michio; Okunishi, Toshifumi; and Fudo, Eiji, to Sumitomo Electric Industries, Ltd.; and Tokai Electric Wire Company Limited. Branch wire connecting apparatus. 4,622,733, Cl. 29-564.400.

Fukuo, Koichi; and Yamamoto, Hiroki, to Honda Giken Kogyo Kabushiki Kaisha. Lubricant feed system for use in the journal of a crankshaft. 4,622,933, Cl. 123-196.00R.

Fukuoka, Tatsuhiko: *See—*
Futamura, Kenichiro; Asada, Eiji; and Fukuoka, Tatsuhiko, 4,623,595, Cl. 428-553.000.

Fukuzawa, Miyuki: *See—*
Yokokawa, Hidemi; Murooka, Rikichi; Fukuzawa, Miyuki; and Tomioka, Machiko, 4,623,984, Cl. 364-900.000.

Fuller, James T. Spring battery retainer. 4,623,206, Cl. 339-17.00C.

Fulton Manufacturing Corporation: *See—*
Ebey, Edward, 4,623,125, Cl. 254-420.000.

Fuma, Toyoji; Nishikawa, Kazuyuki; Makiguchi, Naoshi; Nagano, Katsuya; Nakayama, Yoshio; and Sasaki, Hiroyuki, to Nihon Sekiso Kogyo Co., Ltd.; and Sintokogio Ltd. Method for manufacture of shaped article of organic substance. 4,623,499, Cl. 264-83.000.

Funahashi, Yuichi: *See—*
Watanabe, Junichiro; and Funahashi, Yuichi, 4,623,739, Cl. 556-410.000.
Watanabe, Junichiro; and Funahashi, Yuichi, 4,623,741, Cl. 556-465.000.

Funakoshi, Katsumi: *See—*
Yoshida, Hiromi; Miyamura, Masataka; Funakoshi, Katsumi; and Nagano, Riichiro, 4,623,610, Cl. 430-326.000.

Funato, Hiroyoshi: *See—*
Kaneko, Yutaka; and Funato, Hiroyoshi, 4,623,791, Cl. 250-234.000.

Fundex: *See—*
Verstraeten, Alexander J., 4,623,025, Cl. 175-21.000.

Furukawa, Katsuki: *See—*
Suzuki, Akira; Furukawa, Katsuki; Higashigaki, Yoshiyuki; and Harada, Shigeo, 4,623,425, Cl. 156-613.000.

Fussnegger, Wolfgang: *See—*
Andres, Rudolf; Fussnegger, Wolfgang; Grantz, Helmut; and Heiss, Werner, 4,623,166, Cl. 280-751.000.

Futamura, Kenichiro; Asada, Eiji; and Fukuoka, Tatsuhiko, to Taiho Kogyo Co., Ltd. Sliding member and process for producing the same. 4,623,595, Cl. 428-553.000.

Futo, Arpad: *See—*
Warren, William C.; and Futo, Arpad, 4,622,903, Cl. 110-221.000.

GA Technologies Inc.: *See—*
Creedon, Richard L., 4,622,824, Cl. 62-55.000.
Woolf, Lawrence D., 4,623,862, Cl. 335-216.000.

Gaebel, Gary R. Toothbrush. 4,622,984, Cl. 132-84.00R.

Gaelic, Christopher J., to Fisher & Paykel Limited. Clothes washing machines. 4,622,708, Cl. 8-158.000.

Gaffrig, James W. Marine pitot tube. 4,622,850, Cl. 73-182.000.

Gaisch, Helmut; Krasna, Beth; and Schulthess, Dieter, to Fabriques de Tabac Reunies S.A. Continuous method of denitrating tobacco extracts. 4,622,982, Cl. 131-297.000.

Galan, Louis, to Photon Sources, Inc. Articulated laser arm. 4,623,229, Cl. 350-623.000.

Galasso, Francis S.; Prewo, Karl M.; and Veltri, Richard D., to United Technologies Corporation. Composite mirror substrate. 4,623,228, Cl. 350-609.000.

Gallone, Fiorenzo, to Mondial S.p.A. Sliding unit for tool machines. 4,623,201, Cl. 384-53.000.

Gambetta, David L., to ITT Corporation. Valve with improved seal. 4,623,122, Cl. 251-328.000.

Gamble, Bruce W.: *See—*
Brown, Mark E.; Gamble, Bruce W.; Piatt, Michael J.; and Vandagriff, Randy D., 4,623,897, Cl. 346-75.000.

Gamo, Takaharu: *See—*
Takeshita, Isao; Yanagihara, Nobuyuki; Gamo, Takaharu; and Moriwaki, Yoshio, 4,623,018, Cl. 165-104.120.

Gans, Eugene; Nacht, Sergio; and Yeung, David, to Richardson-Vicks Inc. Topical treatment of skin inflammatory disorders. 4,623,667, Cl. 514-762.000.

Gardner Bender, Inc.: *See—*
Bergman, Brian A., 4,622,837, Cl. 72-34.000.

Garretson, Oliver R.; and Watson, Gordon W., to Angliatech Limited. Probe device for testing an integrated circuit. 4,623,839, Cl. 324-158.00P.

Garrett Corporation, The: *See—*
Kobayashi, Robert J., 4,622,817, Cl. 60-608.000.

Garrett, John P.: *See—*
Getz, Marion E.; Harris, Christopher J.; McConnell, Philip J.; Norton, Mark L.; Garrett, John P.; and Harding, Angela I., 4,623,964, Cl. 364-401.000.

Garris, Vladimir A., to Eastman Kodak Company. Apparatus for treating a movable surface. 4,622,914, Cl. 118-77.000.

Gasti-Verpackungsmaschinen GmbH: *See—*
Turtschan, Alfons, 4,622,800, Cl. 53-425.000.

Gates Rubber Company, The: *See—*
White, Larry F., 4,623,267, Cl. 384-125.000.

Gath, Dietmar: *See—*
Bischoff, Gilbert; Muller, Reiner; and Gath, Dietmar, 4,622,882, Cl. 91-369.00R.

Gautier, Daniel M.; and Lagoutte, Andre, to Electricite de France. Atmospheric cooling tower with reduced vapor cloud. 4,623,494, Cl. 261-161.000.

Gay, Adrian C.: *See—*
Bresenham, Jack E.; Gay, Adrian C.; and Richards, John P., 4,623,880, Cl. 340-723.000.

Gayer, Herbert; Reinecke, Paul; Brandes, Wilhelm; and Hanssler, Gerd, to Bayer Aktiengesellschaft. Fungicidal iminomethyl-azolyl derivatives. 4,623,655, Cl. 514-399.000.

Gebr. Happich GmbH: *See—*
Juraschek, Peter; and Nowak, Manfred, 4,623,188, Cl. 296-97.00G.

Geiger, Rolf; Gerhards, Hermann; and Kruse, Hansjorg, to Hoechst Aktiengeselleschaft. Novel peptides which are active on the central nervous system and have an action on the cholinergic system. 4,623,715, Cl. 530-330.000.

Genco, Louis V.: *See—*
Task, Harry L.; and Genco, Louis V., 4,623,258, Cl. 356-432.000.

General Clutch Corporation: *See—*
Rude, Edward T.; Nisenson, Jules; and Waine, Martin, 4,623,012, Cl. 160-243.000.

General Computer Company: *See—*
Ackerman, Mark S.; and Parker, Glenn, 4,623,147, Cl. 273-1.00E.

General Dynamics, Pomona Division: *See—*
Long, Stuart G.; and Maciocia, Michael J., 4,623,564, Cl. 427-393.000.

General Electric Company: *See—*
Bisson, Donald K.; and Fritzsche, Harold L., 4,622,835, Cl. 72-16.000.
Hoffman, Mary V.; and Paynter, John, 4,623,816, Cl. 313-487.000.
Kiesel, George W.; Rajotte, Paul T.; and Wambolt, LeeAnne, 4,623,865, Cl. 336-65.000.
Peters, Edward N., 4,623,732, Cl. 548-480.000.
Traver, Frank J.; John, Simon M.; and Merrill, Duane F., 4,623,700, Cl. 525-478.000.
Welles, Kenneth B., II, 4,623,887, Cl. 340-825.570.
West, Paul R., 4,623,611, Cl. 430-329.000.

General Mining Union Corporation Limited: *See—*
Bohme, Rolf C.; and Lazerson, Max M., 4,623,792, Cl. 250-255.000.

General Motors Corporation: *See—*
Arndt, Norbert; and Schneider, Udo, 4,623,092, Cl. 237-12.30C.
Beam, Paul E., Jr., 4,623,297, Cl. 415-118.000.
Copp, Douglas M., 4,623,050, Cl. 188-340.000.
Fetouh, Mohamed A., 4,622,864, Cl. 74-597.000.
Lange, Kevin M., 4,623,775, Cl. 219-120.000.
Matekunas, Frederic A., 4,622,939, Cl. 123-425.000.
Schad, Kurt; and Gora, Hans-Joachim, 4,623,035, Cl. 181-274.000.
Trabert, Hans-Gerhard; and Scharf, Claus P., 4,623,182, Cl. 293-155.000.

General Signal Corporation: *See—*
Schmitz, Anthony N.; and Matta, Joseph J., 4,623,921, Cl. 358-143.000.

Genovese, James A.: *See—*
James, John T.; Buettner, Leonard C.; and Genovese, James A., 4,622,852, Cl. 73-865.600.

Georg Fischer Aktiengeselischaft: *See—*
Riethmann, Max, 4,623,385, Cl. 75-53.000.

Geortner, Jack, to Construction Specialties, Inc. Panel wall system. 4,622,794, Cl. 52-403.000.

Geosource, Inc.: *See—*
Vitringa, Frederick A., 4,623,991, Cl. 367-133.000.

Gerber, Arthur H.: *See—*
Nicholson, Richard R.; and Gerber, Arthur H., 4,623,682, Cl. 524-3.000.

Gerber Products Company: *See—*
Brown, John M.; Herritz, Donald W.; Ottinger, Barbara L.; and Westmas, Laland D., 4,623,068, Cl. 215-11.00R.

Gerfast, Sten R.: *See—*
Alexander, Jerry L.; Narayan, Sankar B.; Gerfast, Sten R.; and Nelson, Charles E., 4,623,570, Cl. 428-65.000.

Gerhards, Hermann: *See—*
Geiger, Rolf; Gerhards, Hermann; and Kruse, Hansjorg, 4,623,715, Cl. 530-330.000.

Geringer, Arthur V.; Geringer, Richard G.; and Geringer, David A. Lock assembly. 4,623,178, Cl. 292-173.000.

Geringer, Arthur V.; Geringer, Richard G.; and Geringer, David A. Entry closure assembly. 4,623,181, Cl. 292-336.300.

Geringer, David A.: *See—*
Geringer, Arthur V.; Geringer, Richard G.; and Geringer, David A., 4,623,178, Cl. 292-173.000.
Geringer, Arthur V.; Geringer, Richard G.; and Geringer, David A., 4,623,181, Cl. 292-336.300.

Geringer, Richard G.: *See—*
Geringer, Arthur V.; Geringer, Richard G.; and Geringer, David A., 4,623,178, Cl. 292-173.000.
Geringer, Arthur V.; Geringer, Richard G.; and Geringer, David A., 4,623,181, Cl. 292-336.300.

Gerow, Frank J., to Synergist Limited. Apparatus for protecting a pre-formed projecting appendage during plastic molding. 4,623,116, Cl. 249-55.000.

Gething, Frank: *See—*
Glenn, Edward P.; and Gething, Frank, 4,622,775, Cl. 47-63.000.

Gettert, Hans: *See—*
Broecker, Franz J.; Gettert, Hans; and Kaempfer, Knut, 4,623,533, Cl. 423-573.00G.

Getz, Marion E.; Harris, Christopher J.; McConnell, Philip J.; Norton, Mark L.; Garrett, John P.; and Harding, Angela I., to International Business Machines Corporation. Homogeneous hierarchial computer business system. 4,623,964, Cl. 364-401.000.

Gevipi A.G.: *See—*
Knapp, Alfons, 4,623,000, Cl. 137-625.170.

Gewerkschaft Eisenhutte Westfalia: *See—*
Kussel, Willy; and Demircan, Bayramali, 4,622,998, Cl. 137-596.150.

GfE Gesellschaft fur Elektrometallurgie mbH: *See—*
Hahn, Reinhard; Rettelsdorf, Hans-Joachim; Fichte, Rudolf; and Sattelberger, Siegfried, 4,623,386, Cl. 75-10.180.

Ghent Manufacturing Inc.: *See—*
Hutten, James E., 4,623,169, Cl. 281-45.000.

Gibson, Baylor D.: *See—*
Felton, Clinton D.; Gibson, Baylor D.; Jamison, Charles E.; McWhorter, William O.; and Serad, George A., 4,623,438, Cl. 204-168.000.

Giddey, Claude; and Dove , Georges, to Battelle Memorial Institute. Method for the fabrication of a cheese foam. 4,623,551, Cl. 426-564.000.

Giebeler, Robert H., Jr., to Varian Associates, Inc. Ultrasound hyperthermia applicator with variable coherence by multi-spiral focusing. 4,622,972, Cl. 128-399.000.

Giersch, Wolfgang K.: *See—*
Schulte-Elte, Karl-Heinrich; Ohloff, Gunther; Muller, Bernard L.; and Giersch, Wolfgang K., 4,623,750, Cl. 568-822.000.

Gillet, Francois: *See—*
Allio, Roland; Del Fabbro, Gilbert; Debrabant, Francois; and Gillet, Francois, 4,623,140, Cl. 271-305.000.

Gilligan, Paul J.; McGuirk, Paul R.; and Witty, Michael J., to Pfizer Inc. Antibiotic derivatives of 7-phenyl-1,4-dihydro-4-oxo-3-quinolinecarboxylic acids. 4,623,650, Cl. 514-312.000.

Gilliland, John H.: *See—*
Erickson, Kenneth W.; and Gilliland, John H., 4,623,859, Cl. 335-14.000.

Gillingham, Gary R., to Donaldson Company, Inc. Integral valve and tank assembly for pulse-jet air cleaners. 4,622,995, Cl. 137-590.000.

Gillingham, Gary R., to Donaldson Company, Inc. Aspirator for pulse-jet air cleaner. 4,622,996, Cl. 137-590.000.

Gimpel, Juergen; Gulbins, Erich; and Ley, Gregor, to BASF Aktiengesellschaft. Preparation of a binder suitable for coating agents. 4,623,679, Cl. 523-410.000.

Giocastro, James: *See—*
Giocastro, Joseph; Giocastro, Peter; and Giocastro, James, 4,622,932, Cl. 123-192.00R.

Giocastro, Joseph; Giocastro, Peter; and Giocastro, James. V-crank-arm. 4,622,932, Cl. 123-192.00R.

Giocastro, Peter: *See—*
Giocastro, Joseph; Giocastro, Peter; and Giocastro, James, 4,622,932, Cl. 123-192.00R.

Girard, Philippe: *See—*
Daude, Gerard; and Girard, Philippe, 4,623,592, Cl. 428-423.300.

Giulini Chemie GmbH: *See—*
Faessler, Fritz; and Stadler, Siegmund, 4,623,014, Cl. 164-7.100.

Glaenzer Spicer: *See*—
Orain, Michel A., 4,623,321, Cl. 464-7.000.

Glamkowski, Edward J.; and Ehrgott, Frederick J., Jr., to Hoechst-Roussel Pharmaceuticals Inc. Spiro [benzofuran-2(3H),1'-cycloheptane]s and their therapeutic use. 4,623,657, Cl. 514-462.000.

Glanz, Ronald P.; and Miner, Gerald E., Jr., to Teepak, Inc. Methods of severing sausage casings. 4,622,718, Cl. 17-49.000.

Glassford, Craig L.: *See*—
Dembicki, Dennis R.; Coan, Frederick L.; Glassford, Craig L.; and Overman, Dana C., 4,623,704, Cl. 526-68.000.

Glemming, Marvin R.; and Bieger, Walter I., to Glemmings, Marvin R. Chording apparatus for stringed musical instrument. 4,622,880, Cl. 84-317.000.

Glemmings, Marvin R.: *See*—
Glemming, Marvin R.; and Bieger, Walter I., 4,622,880, Cl. 84-317.000.

Glenn, Edward P.; and Gething, Frank, to Kraft, Inc. Hydroponic plant collars. 4,622,775, Cl. 47-63.000.

Glenn, James W.; and Brown, Joseph C., to Figgie International, Inc. Signal pattern encoder and classifier. 4,624,009, Cl. 381-43.000.

Glesius, Frederick L.; Kroon, John C.; Schneider, Donald A.; and Myrabo, Arne L., to Reuter-Stokes, Inc. Wide range flux monitor assembly. 4,623,508, Cl. 376-254.000.

Glitten, John A. Elevatable cooking device. 4,622,945, Cl. 126-25.00A.

Glyco-Metall-Werke, Daelen & Loos GmbH: *See*—
Hodes, Erich; and Wegner, Karl-Heinz, 4,623,590, Cl. 428-408.000.

Gnant, Russell S., to W. H. Brady Co. Foldable membrane switch with fold remote from contact-carrying panels. 4,623,768, Cl. 200-159.00B.

Gobel, Armin: *See*—
Patzschke, Hans-Peter; Gobel, Armin; and Bohmert, Reiner, 4,623,690, Cl. 524-538.000.

Goel, Anil B., to Ashland Oil, Inc. Phosphorous containing derivatives of bicyclic amide acetals. 4,623,744, Cl. 558-170.000.

Goetz, Norbert: *See*—
Jahn, Dieter; Becker, Rainer; Goetz, Norbert; Keil, Michael; and Wuerzer, Bruno, 4,623,381, Cl. 71-94.000.

Gogniat, Paul; and Loth, Eric, to Montres Rado S.A. Timepiece having a transparent element partially covered by a coating. 4,623,262, Cl. 368-294.000.

Gohara, Wadie F.: *See*—
Murphy, Melvin E.; and Gohara, Wadie F., 4,622,904, Cl. 110-263.000.

Golden Enterprises, Incorporated: *See*—
Winter, Walter W.; Gothard, Steven E.; and Drew, John H., 4,623,761, Cl. 379-84.000.

Goldschmidt, Erwin: *See*—
Eirich, Paul; Eirich, Walter; Eirich, Hubert; and Goldschmidt, Erwin, 4,624,003, Cl. 373-120.000.

Goldschmidt, Willfred: *See*—
Lewis, Jean D.; Goldschmidt, Willfred; Coiro, Donald; and Engler, Phillip V., 4,623,235, Cl. 354-312.000.

Golov, Veniamin G.: *See*—
Ivanov, Mikhail G.; Golov, Veniamin G.; Kuzmin, Vladimir N.; Alyakrinskaya, Aida I.; Mushy, Roman Y.; Kovalev, Alexei D.; Shutova, Nadezhda V.; Rodionov, Jury A.; Molev, Igor I.; Yakovleva, Ljudmila S.; Berezin, Vitaly B.; Petrashko, Alexei I.; Shuev, Gennady M.; Bukin, Boris A.; Belkina, Tamara M., deceased; and Belkin, Naum S., administrator, 4,623,731, Cl. 548-374.000.

Gombrich, Peter P.; Uttermark, John A.; Schmid, Sidney L.; and Larson, Denis L., to ADC Telecommunications. Electronic hand held tape labeler. 4,623,418, Cl. 156-361.000.

Gonzales, Gilda C.: *See*—
DeGuiseppi, David T.; and Gonzales, Gilda C., 4,623,673, Cl. 521-110.000.

Goodman, Howard; and Fugler, Andrew R., to English Clays Lovering Pochin & Company, Ltd. Organo-clays. 4,623,398, Cl. 106-308.00N.

Goodrich, Judson E., to Chevron Research Company. Method for producing industrial asphalts without air-blowing using maleic anhydride. 4,623,395, Cl. 106-273.00R.

Gora, Hans-Joachim: *See*—
Schad, Kurt; and Gora, Hans-Joachim, 4,623,035, Cl. 181-274.000.

Gordon, Eric M.: *See*—
Natarajan, Sesha I.; and Gordon, Eric M., 4,623,729, Cl. 546-256.000.

Gordon, Robert T. Cancer treatment method. 4,622,952, Cl. 128-1.300.

Gordon, Robert T. Process for the treatment of atherosclerotic lesions. 4,622,953, Cl. 128-1.300.

Goss, George R., to Oil-Dri Corporation of America. Animal litter. 4,622,920, Cl. 119-1.000.

Gothard, Steven E.: *See*—
Winter, Walter W.; Gothard, Steven E.; and Drew, John H., 4,623,761, Cl. 379-84.000.

Goto, Eiichi, to Rikagaku Kenkyusho. Fluxoid type superconducting logic element. 4,623,804, Cl. 307-476.000.

Goto, Toshio: *See*—
Kurahashi, Yoshio; Shiokawa, Kozo; Goto, Toshio; Kagabu, Shinzo; Kamochi, Atsumi; Moriya, Koichi; and Hayakawa, Hidenori, 4,623,377, Cl. 71-92.000.

Goto, Yasuyuki: *See*—
Ogawa, Tetsuya; Goto, Yasuyuki; Kitano, Kisei; and Yoshida, Naoyuki, 4,623,477, Cl. 252-299.500.

Grabbe, Dimitry; and Korsunsky, Iosif, to AMP Incorporated. Laser to fiber connection. 4,623,220, Cl. 350-96.200.

Grant, Alan H. Container for an optical element. 4,623,249, Cl. 356-124.000.

Grantz, Helmut: *See*—
Andres, Rudolf; Fussnegger, Wolfgang; Grantz, Helmut; and Heiss, Werner, 4,623,166, Cl. 280-751.000.

Grass Valley Group, Inc., The: *See*—
Hill, Stephen, 4,622,861, Cl. 74-531.000.

Gravelle, Alain, to Framatome & Cie. Device for locating the position of control rods of a nuclear reactor. 4,623,507, Cl. 376-258.000.

Gravley, Mark L.; and Kertok, Mark E., to Phillips Petroleum Company. Carbon black reactor. 4,623,521, Cl. 422-156.000.

Grebe, Reiner; Norbisrath, Max; and Schmidt, Karl-Heinz, to Kramer & Grebe GmbH & Co. KG. Process and equipment for cutting material. 4,623,096, Cl. 241-30.000.

Green, Joseph, to FMC Corporation. Bicyclic phosphine oxides and their use as flame retardants in styrene modified polyphenylene ether resins. 4,623,687, Cl. 524-116.000.

Greenbaum, George. Solamar II. 4,622,950, Cl. 126-428.000.

Greene, George J., Jr. Planter and method of producing same. 4,622,777, Cl. 47-67.000.

Grega nee Toth, Erzsebet; Nagy, Jozsef; Tarpai, Gyula; Lorik, Erno ; Toth, Istvan; Pasztor, Karoly; Bartfai nee Harsanyi, Zsuzsanna; Beres, Ilona; Tasi, Laszlo ; Urszin nee Simon, Eszter; Dombay, Zsolt; Bajusz nee Olah, Judit; and Balogh, Karoly, to Eszakmagyarorszagi Vegyimuvek. Novel N- and optionally N-substituted (N-dichloroacetyl)glycine amides with an antidote action. 4,623,383, Cl. 71-100.000.

Greiff, Hermann A., to Seco Tools AB. Milling cutter. 4,623,284, Cl. 407-38.000.

Grenko, Joseph. Roller skate. 4,623,159, Cl. 280-11.270.

Gresser, Gerhard: *See*—
Binder, Werner; Gresser, Gerhard; and Dettelbach, Alfred, 4,622,748, Cl. 30-380.000.

Grieves, Richard; and Pratley, Kimleigh G. M., to Pratley Investments Limited. Two-component adhesive or sealing composition. 4,623,702, Cl. 525-528.000.

Griffith, John D., to Sulzer Brothers Limited. Device for metering weft yarn. 4,623,007, Cl. 139-452.000.

Griffiths, Janet P.: *See*—
Taylor, David; and Griffiths, Janet P., 4,623,691, Cl. 524-542.000.

Griffiths, Joseph A. Under helmet hood for aircrew. 4,622,696, Cl. 2-6.000.

Grim, Otto, to Harmstorf AG. Driving arrangement for watercraft. 4,623,299, Cl. 416-124.000.

Grisar, J. Martin; Dage, Richard C.; and Schnettler, Richard A., to Merrell Dow Pharmaceuticals Inc. Cardiotonic heterocyclocarbonyl- and acetyl-thiazolones. 4,623,651, Cl. 514-342.000.

Grogler, Gerhard: *See*—
Hurnik, Helmut; Grogler, Gerhard; Hess, Heinrich; and Kopp, Richard, 4,623,686, Cl. 524-101.000.

Groner, Hans: *See*—
Distel, Robert; Groner, Hans; and Kugland, Peter, 4,622,811, Cl. 60-303.000.

Groothuizen, Jan C., to Hoogovens Groep B.V. Method of marking a hot steel slab. 4,623,561, Cl. 427-275.000.

Groschel, Wolfgang: *See*—
Denz, Helmut; Etzold, Peter; Groschel, Wolfgang; Kaiser, Gunther; Kraemer, Heinz; Nitschke, Werner; and Zechnall, Martin, 4,623,974, Cl. 364-551.000.

Gross, Gertrude. Adjustable drape and rod assembly. 4,623,013, Cl. 160-345.000.

Grupa, Johann, to Webasto-Werk W. Baier GmbH & Co. Air-conditioning plant for motor vehicles, especially for buses. 4,622,831, Cl. 62-244.000.

GTE Communication Systems Corporation: *See*—
Boeckmann, Eduard F. B.; and James, Miranda L., 4,623,762, Cl. 379-393.000.
Thoma, Donald E., 4,623,874, Cl. 340-347.0DD.

GTE Products Corporation: *See*—
Mizuhara, Howard, 4,623,513, Cl. 420-470.000.
Morris, Merle E.; and Senft, Stephen P., 4,623,817, Cl. 313-275.000.
Scheithauer, Richard A.; Vanderpool, Clarence D.; and Miller, Michael J., 4,623,534, Cl. 423-593.000.
Van der Linde, John R.; Szep, James P.; and Dayton, David, 4,623,958, Cl. 362-267.000.

GTE Valeron Corporation: *See*—
Van Sickle, Richard G.; and Mathie, Gerald W., 4,622,871, Cl. 82-1.200.

Gubau, Jose , to Ing. C. Olivetti & C., S.p.A. Cartridge for a ribbon for typewriters. 4,623,273, Cl. 400-208.000.

Gugumus, Francois, to Ciba-Geigy Corporation. Synergistic mixtures of nickel-containing 2,2'-thiobis(alkylphenols) and pyrazolates. 4,623,480, Cl. 252-400.530.

Gulbins, Erich: *See*—
Gimpel, Juergen; Gulbins, Erich; and Ley, Gregor, 4,623,679, Cl. 523-410.000.

Gulow, Robert: *See*—
Aziz, Edward M.; and Gulow, Robert, 4,622,796, Cl. 52-747.000.

Gurs, Karl, to Battelle-Institut e.V. Laser apparatus. 4,624,001, Cl. 372-90.000.

Gustafson, Thomas L.: *See*—
Nevins, Norman; and Gustafson, Thomas L., 4,623,677, Cl. 523-122.000.

Gutierrez, Eddie N.: *See*—
Lamberti, Vincent; and Gutierrez, Eddie N., 4,623,483, Cl. 252-545.000.

Guzzetta, Franklin H.: *See*—
Jamison, Warren E.; Stull, Dean P.; and Guzzetta, Franklin H., 4,623,472, Cl. 252-12.200.

Gwozdz, Peter S.; Schmidt, Christopher O.; and Price, William L., to Advanced Micro Devices, Inc. Method of making integrated bipolar semiconductor device by first forming junction isolation regions and recessed oxide isolation regions without birds beak. 4,622,738, Cl. 29-576.00B.

Hack, Joachim: *See*—
Kraus, Gerold; Huber, Walter; Hack, Joachim; Schulze-Berge, Klaus; and Sold, Roland, 4,623,942, Cl. 360-75.000.

Haddad, James H.; and Owen, Hartley, to Mobil Oil Corporation. Closed cyclone FCC catalyst separation with stripping gas injection and direct steam injection. 4,623,446, Cl. 208-113.000.

Haddock, Richard; and Lichtenstein, Terri, to Drexler Technology Corporation. Laser recording apparatus with off-center lens and error detection. 4,623,784, Cl. 250-201.000.

Hagen, Marcus W.: *See*—
Wenstadt, Thomas D.; and Hagen, Marcus W., 4,622,938, Cl. 123-413.000.

Hagen, William F., to Turbo Refrigerating Company. Ice making machine. 4,622,832, Cl. 62-344.000.

Hahn, Klaus: *See*—
Junginger, Erich; Hahn, Klaus; Schnaibel, Eberhard; and Schneider, Erich, 4,622,936, Cl. 123-399.000.

Hahn, Reinhard; Retelsdorf, Hans-Joachim; Fichte, Rudolf; and Satteiberger, Siegfried, to GfE Gesellschaft fur Elektrometallurgie mbH. Carbothermal method of producing cobalt-boron and/or nickel-boron. 4,623,386, Cl. 75-10.180.

Haikawa, Yukihiko: *See*—
Juso, Hiromi; Sudoh, Kengo; and Haikawa, Yukihiko, 4,623,941, Cl. 360-18.000.

Hain, David A.; and Walker, Ian J., to NCR Corporation. Burster apparatus for continuous forms. 4,623,081, Cl. 225-105.000.

Hajos, Gyorgy: *See*—
Bernath, Gabor; Kobor, Jeno ; Folop, Ferenc; Sohar, Pal; Perjesi, Pal; Ezer, Elemer; Hajos, Gyorgy; Palosi, Eva; Denes, Laszlo ; and Szporny, Laszlo , 4,623,647, Cl. 514-228.000.

Hakola, Gordon R. Quick release expendable apex apparatus with bonded liner. 4,623,458, Cl. 210-238.000.

Halasa, Adel F.: *See*—
Hergenrother, William L.; Fieldhouse, John W.; and Halasa, Adel F., 4,623,525, Cl. 423-275.000.

Hales, Eric C.: *See*—
Barnett, John R.; and Hales, Eric C., 4,623,046, Cl. 188-79.5GT.

Hall, Daniel W.: *See*—
Bachrach, Benjamin I.; Fuhrman, William J.; Hall, Daniel W.; and Hauser, Gotz S., 4,622,842, Cl. 72-467.000.

Hall, Gary R. Hand held suction nozzle with metal detector. 4,622,766, Cl. 37-58.000.

Hall, Robert E.; and Whynacht, Charles, to Otis Elevator Corporation. Method and apparatus for reducing elevator service calls. 4,623,040, Cl. 187-29.00R.

Hallen, Jan-Ake. Optical-fiber lighting unit having a movable lamp holder. 4,623,217, Cl. 350-96.100.

Halliburton Company: *See*—
Moon, John J., Jr.; Surjaatmadja, Jim B.; and Ehlert, Mark C., 4,622,846, Cl. 73-59.000.

Hallinger, Claude C.; and Lardellier, Alain M. J., to Societe Nationale d'Etudes et de Construction de Moteurs d'Aviation. Turbine shroud sealing device. 4,623,298, Cl. 415-139.000.

Hamaguchi, Akira: *See*—
Jabami, Ryozo; Hamaguchi, Akira; Matsuda, Shigeru; and Ejima, Yasuyuki, 4,622,827, Cl. 62-158.000.

Hamano, Isao; Morishita, Akira; Akae, Yoshifumi; Nishimura, Youji; Tanaka, Toshinori; and Yabunaka, Kiyoshi, to Mitsubishi Denki Kabushiki Kaisha. Engine starter protecting device. 4,622,930, Cl. 123-179.00K.

Hamazaki, Yoshihisa: *See*—
Toda, Masumi; Mori, Masashi; Nonaka, Shingo; Kyoden, Hiroshi; Ichikawa, Kenji; and Hamazaki, Yoshihisa, 4,623,393, Cl. 106-38.220.

Hamlin, Jerry J., to International Manufacturing and Water Vending Company. Water purifying and vending apparatus. 4,623,467, Cl. 210-652.000.

Hampl, Vladimir, Jr.: *See*—
Mathews, John H.; Durocher, Donald F.; and Hampl, Vladimir, Jr., 4,622,983, Cl. 131-365.000.

Hanazono, Masanobu: *See*—
Mitsuoka, Katsuya; Narishige, Shinji; Kumagai, Akira; Sano, Masaaki; Hara, Shinichi; and Hanazono, Masanobu, 4,623,439, Cl. 204-192.200.

Handa, Masao; Ueki, Mikio; Tokuya, Tomohiko; Hori, Mitsuaki; Yasuoka, Hidenori; Sato, Toshio; Ichihara, Takuzo; and Toyama, Kenichi, to Nippon Kokan Kabushiki Kaisha. Screw joint coupling for oil pipes. 4,623,173, Cl. 285-333.000.

Handte, Reinhard: *See*—
Schmierer, Roland; Handte, Reinhard; Mildenberger, Hilmar; Bauer, Klaus; Bieringer, Hermann; and Burstell, Helmut, 4,623,380, Cl. 71-92.000.

Handy, Roland J., to Xerox Corporation. High dynamic range CCD detector/imager. 4,623,928, Cl. 358-213.000.

Hangarter, Otto; Lerch, Hansulrich; and Stillhard, Otmar. Button hole sewing device. 4,622,910, Cl. 112-447.000.

Hankammer, Heinz. Water purifier. 4,623,457, Cl. 210-237.000.

Hanscom, Bradford E.: *See*—
Batla, Masroor A.; and Hanscom, Bradford E., 4,623,758, Cl. 379-80.000.

Hansen, Ernest E. Dispenser for cards. 4,623,073, Cl. 221-45.000.

Hansen, Frederick C., to S. C. Johnson & Son, Inc. Process for preparing an aqueous cut of a ligand-free monomer/maleic anhydride polymer and product. 4,623,692, Cl. 524-549.000.

Hanssler, Gerd: *See*—
Brandes, Wilhelm; Hanssler, Gerd; Reinecke, Paul; Scheinpflug, Hans; and Holmwood, Graham, 4,623,653, Cl. 514-383.000.
Gayer, Herbert; Reinecke, Paul; Brandes, Wilhelm; and Hanssler, Gerd, 4,623,655, Cl. 514-399.000.

Hanyu, Susumu; Takenoya, Hideaki; and Mishima, Fumiyuki, to Janome Sewing Machine Co., Ltd. Shifting mechanism for a sintered-body platen in a dot-matrix impact printer. 4,623,275, Cl. 400-662.000.

Hara, Kunihiko: *See*—
Itoh, Hiroshi; Ohmi, Shinya; Suzuki, Yasutoshi; Fukada, Tsuyoshi; and Hara, Kunihiko, 4,623,222, Cl. 350-331.00T.

Hara, Shinichi: *See*—
Mitsuoka, Katsuya; Narishige, Shinji; Kumagai, Akira; Sano, Masaaki; Hara, Shinichi; and Hanazono, Masanobu, 4,623,439, Cl. 204-192.200.

Harada, Hiromu: *See*—
Iizuka, Kinji; Kamijo, Tetsuhide; Yamamoto, Ryoji; and Harada, Hiromu, 4,623,724, Cl. 544-107.000.

Harada, Kunihiro: *See*—
Harita, Yoshiyuki; Kamoshida, Yoichi; Takatori, Masashige; and Harada, Kunihiro, 4,623,609, Cl. 430-325.000.

Harada, Shigeo: *See*—
Suzuki, Akira; Furukawa, Katsuki; Higashigaki, Yoshiyuki; and Harada, Shigeo, 4,623,425, Cl. 156-613.000.

Harada, Yuhkow: *See*—
Enjo, Naonori; and Harada, Yuhkow, 4,623,475, Cl. 252-68.000.

Harding, Angela I.: *See*—
Getz, Marion E.; Harris, Christopher J.; McConnell, Philip J.; Norton, Mark L.; Garrett, John P.; and Harding, Angela I., 4,623,964, Cl. 364-401.000.

Harfenist, Morton; and Joyner, Charles T. Method for inhibiting monoamine oxidase-A and treating depression by administering 3-N-methyl-thioxanthen-9-one carboxamide 10,10-dioxide. 4,623,656, Cl. 514-437.000.

Hargrove, Homer G.: *See*—
Draper, Robert; Silvestri, George J., Jr.; and Hargrove, Homer G., 4,622,819, Cl. 60-657.000.

Harita, Yoshiyuki; Kamoshida, Yoichi; Takatori, Masashige; and Harada, Kunihiro, to Japan Synthetic Rubber Co., Ltd. Process for forming patterns using ionizing radiation sensitive resist. 4,623,609, Cl. 430-325.000.

Harmstorf AG: *See*—
Grim, Otto, 4,623,299, Cl. 416-124.000.

Harpell, Gary A.; Kavesh, Sheldon; Palley, Igor; and Prevorsek, Dusan C., to Allied Corporation. Ballistic-resistant composite article. 4,623,574, Cl. 428-113.000.

Harper, Howard M.: *See*—
Emery, Clayton N.; and Harper, Howard M., 4,622,875, Cl. 83-80.000.

Harra, John. Gauge for machine tools. 4,622,752, Cl. 33-185.00R.

Harreus, Albrecht: *See*—
Casals-Stenzel, Jorge; Weber, Karl-Heinz; Walther, Gerhard; Harreus, Albrecht; and Muacevic, Gojko, 4,623,646, Cl. 514-220.000.

Harris, Christopher J.: *See*—
Getz, Marion E.; Harris, Christopher J.; McConnell, Philip J.; Norton, Mark L.; Garrett, John P.; and Harding, Angela I., 4,623,964, Cl. 364-401.000.

Harris, Robert W.; and Weber, William R. Dental floss knot tying device. 4,622,986, Cl. 132-92.00R.

Harrison, Earnest R., Jr., to Texas Instruments Incorporated. Air release in seismic source air gun. 4,623,033, Cl. 181-120.000.

Hartmann, Heinrich: *See*—
Brunnmueller, Fritz; Kroner, Michael; Hartmann, Heinrich; Linhart, Friedrich; and Pfitzner, Klaus, 4,623,699, Cl. 525-355.000.

Hartranft, Thomas P., to McNeilab, Inc. Pump monitor for photoactivation patient treatment system. 4,623,328, Cl. 604-4.000.

Haruyama, Hideaki: *See*—
Kobayashi, Hiroshi; Haruyama, Hideaki; and Hirose, Tsuguhiro, 4,623,998, Cl. 370-85.000.

Harvey, Mark C.: *See*—
Carp, Ralph W.; and Harvey, Mark C., 4,623,976, Cl. 364-571.000.

Harwood, Leopold A.: *See*—
Wargo, Robert A.; and Harwood, Leopold A., 4,623,924, Cl. 358-166.000.

Hasada, Eiichi: *See*—
Fujiwara, Kenichi; Hasada, Eiichi; and Sugi, Hikaru, 4,622,828, Cl. 62-200.000.

Hasegawa, Jun; and Ueda, Makoto, to Nippon Sheet Glass Co., Ltd. Sheet of glass. 4,623,582, Cl. 428-220.000.

Hashimoto, Kenichiro, to Canon Kabushiki Kaisha. Thermal head. 4,623,903, Cl. 346-76.0PH.

Hashimoto, Yutaka: *See*—
Waki, Eiichi; Kobayashi, Shigeo; Hashimoto, Yutaka; and Nakai, Miyoji, 4,623,598, Cl. 429-162.000.

Haskel, Inc.: *See*—
Broderick, Frederick J., 4,622,732, Cl. 29-421.00R.

Hassall, Cedric H.; Johnson, William H.; and Roberts, Noel A., to Hoffmann-La Roche Inc. Peptide derivatives. 4,623,639, Cl. 514-18.000.

Hatano, Hirofumi; Yamazaki, Masayasu; Sasaki, Atsushi; and Mikami, Keigo, to Mitsubishi Jukogyo Kabushiki Kaisha. Calcining apparatus for powdery materials. 4,623,311, Cl. 432-106.000.

Hatori, Hitoshi: *See*—
Saito, Hitoshi; Hatori, Hitoshi; and Matsubayashi, Kazuyuki, 4,623,034, Cl. 181-148.000.

Hattori, Kiyoji: *See*—
Nakanishi, Toshihide; Azuma, Tomoki; Hirao, Toshihiko; Hattori, Kiyoji; and Sakurai, Minoru, 4,623,623, Cl. 435-115.000.

Hauser, Gotz S.: *See*—
Bachrach, Benjamin I.; Fuhrman, William J.; Hall, Daniel W.; and Hauser, Gotz S., 4,622,842, Cl. 72-467.000.

Hausslein, Robert W., to Polaroid Corporation. Proportional density recording medium. 4,623,896, Cl. 346-1.100.

Hayakawa, Hidenori: *See*—
Kurahashi, Yoshio; Shiokawa, Kozo; Goto, Toshio; Kagabu, Shinzo; Kamochi, Atsumi; Moriya, Koichi; and Hayakawa, Hidenori, 4,623,377, Cl. 71-92.000.

Hayashi, Katsumi: *See*—
Dorer, Casper J., Jr.; and Hayashi, Katsumi, 4,623,684, Cl. 524-96.000.

Hayashi, Kiyoshi; Hori, Setsuo; Hirata, Nobuyuki; Kobayashi, Kazuhiro; and Mizuno, Masayuki, to Mita Industrial Co., Ltd. Variable speed image-forming apparatus. 4,623,242, Cl. 355-14.00R.

Hayatsu, Hikoya; Nakano, Masahide; and Matsuo, Yoshikazu, to Sumitomo Chemical Company, Limited. Silica gel linked to a phthalocyanine compound and a method for treating polycyclic organic substances therewith. 4,623,638, Cl. 502-401.000.

Hayes, Kathryn S.; and Olechowski, Jerome R., to Union Camp Corporation. Terpene diesters and process for preparing the same. 4,623,747, Cl. 560-190.000.

Hays, Herbert G.; and Kuipers, Warren W., to Amana Refrigeration, Inc. Recuperative furnace. 4,622,947, Cl. 126-110.00R.

Hazeltine Corporation: *See*—
Enein, Mohamed, 4,623,892, Cl. 342-411.000.

Health Jet, Inc.: *See*—
Chung, Jing-Yau, 4,622,704, Cl. 4-443.000.

Heger, Siegfried, to Siemens Aktiengesellschaft. Automatic interior air temperature control apparatus with a dual purpose fan for use with temperature control systems in motor vehicles. 4,623,090, Cl. 236-49.000.

Heinsohn, Howard H., Jr.: *See*—
Evers, William J.; Stork, Gilbert; Mookherjee, Braja D.; and Heinsohn, Howard H., Jr., 4,623,749, Cl. 560-262.000.

Heiss, Werner: *See*—
Andres, Rudolf; Fussnegger, Wolfgang; Grantz, Helmut; and Heiss, Werner, 4,623,166, Cl. 280-751.000.

Hejlik, Larry J., to Iowa Mold Tooling Co., Inc. Compact foldable crane. 4,623,067, Cl. 212-188.000.

Helios Research Corp.: *See*—
Reynolds, Richard M., 4,623,301, Cl. 417-54.000.

Helipump, Inc.: *See*—
Adler, Robert J., 4,623,470, Cl. 210-787.000.

Hellon, Keith, to MacLean-Fogg Company. Free standing base mold. 4,623,308, Cl. 425-117.000.

Hemmings, John W.: *See*—
Allen, Peter; and Hemmings, John W., 4,623,370, Cl. 62-11.000.

Henderson, Alva E.: *See*—
Lin, Kun-Shan; Henderson, Alva E.; and Frantz, Gene A., 4,624,012, Cl. 381-51.000.

Henderson, James K. Pump for slurries. 4,623,303, Cl. 417-238.000.

Hendrix, James E.; Lane, Kimberley J.; and Daniels, John Y., to Spring Industries, Inc. Oxidative afterwash treatment for non-formaldehyde durable press finishing process. 4,623,356, Cl. 8-107.000.

Hengstler GmbH Geschaftsbereich Haller-Relais: *See*—
Nestlen, Wolfgang; and Reger, Arno, 4,623,863, Cl. 335-230.000.

Henkel, Hans-Joachim; and Muller, Norbert, to Siemens Aktiengesellschaft. Electrical insulation. 4,623,755, Cl. 174-110.0SR.

Henkel Kommanditgesellschaft auf Aktien: *See*—
Bauriedel, Hans, 4,623,709, Cl. 528-65.000.
Hoefer, Rainer; Schmid, Karl-Heinz; and Ackermann, Karl-Heinz, 4,623,695, Cl. 524-747.000.
Wilsberg, Heinz-Manfred, 4,623,471, Cl. 252-8.800.

Henning, Wolfgang; Hombach, Rudolf; Meckel, Walter; and Reiff, Helmut, to Bayer Aktiengesellschaft. Aqueous solutions or dispersions of polyisocyanate polyaddition products, a process for their production and their use as, or in the production of, adhesives. 4,623,416, Cl. 156-331.700.

Henning, Wolfgang: *See*—
Binder, Josef; Cutter, David; Henning, Wolfgang; Schaber, Hans-Christian; Mollmer, Frank; and Reichert, Hansjorg, 4,622,856, Cl. 73-727.000.

Herberts Gesellschaft mit beschraenkter Haftung: *See*—
Patzschke, Hans-Peter; Gobel, Armin; and Bohmert, Reiner, 4,623,690, Cl. 524-538.000.

Heredia de la Paz, Jorge A.: *See*—
Cardenas-Franco, Luis; and Heredia de la Paz, Jorge A., 4,623,375, Cl. 65-163.000.

Hergenrother, William L.; Fieldhouse, John W.; and Halasa, Adel F., to Firestone Tire & Rubber Company, The. Stabilizing complex for poly(dichlorophosphazene). 4,623,525, Cl. 423-275.000.

Hergeth, Hubert: *See*—
Vosbein, Gerd; and Hergeth, Hubert, 4,623,099, Cl. 241-101.00A.

Herman, Joseph. Bowling ball finger insert. 4,623,149, Cl. 273-63.00A.

Hermann, Roloff. Trouser hanger. 4,623,080, Cl. 223-95.000.

Herrington, Fox J., to Mobil Oil Corporation. Rotating disk intermittent orientor for draw tape. 4,623,323, Cl. 493-338.000.

Herritz, Donald W.: *See*—
Brown, John M.; Herritz, Donald W.; Ottinger, Barbara L.; and Westmas, Laland D., 4,623,068, Cl. 215-11.00R.

Hert, Marius, to Societe Chimique des Charbonnages, S.A. Compositions of ethylene polymers for the manufacture of films. 4,623,567, Cl. 428-36.000.

Hert, Marius, to Societe Chimique des Charbonnages S.A. Compositions of ethylene polymers for the manufacture of films. 4,623,581, Cl. 428-220.000.

Hess, Heinrich: *See*—
Hurnik, Helmut; Grogler, Gerhard; Hess, Heinrich; and Kopp, Richard, 4,623,686, Cl. 524-101.000.

Hesser, David J.: *See*—
Stinson, Michael K.; Hines, William L.; and Hesser, David J., 4,623,841, Cl. 324-223.000.

Hewlett-Packard Company: *See*—
Ackley, Donald E.; Engelmann, Reinhart W. H.; and Inouye, Teruko K., 4,623,427, Cl. 156-647.000.
Ware, Frederick A., 4,623,982, Cl. 364-788.000.

Heyman, Eleanor; and Nager, Lois. Disposable bib. 4,622,698, Cl. 2-49.00R.

Hicke, David W.: *See*—
Moehlman, Vernon C.; Hicke, David W.; and Stagg, George A., Jr., 4,623,150, Cl. 273-362.000.

Hida, Junichi: *See*—
Tsukiyama, Yasumitsu; Kito, Yoshikazu; Hida, Junichi; and Tatematsu, Susumu, 4,622,826, Cl. 62-137.000.

Higashi, Toshihiko: *See*—
Miyagaki, Hisanori; Higashi, Toshihiko; Yokogawa, Atsushi; Shimada, Yoshihiro; Kurihara, Nobuo; Nishikawa, Mitsuyo; Sato, Yoshio; Watanabe, Atsumi; and Morooka, Yasuo, 4,622,922, Cl. 122-449.000.

Higashide, Eiji; and Horii, Satoshi, to Takeda Chemical Industries, Ltd. Antimicrobial peptide. 4,623,733, Cl. 548-542.000.

Higashigaki, Yoshiyuki: *See*—
Suzuki, Akira; Furukawa, Katsuki; Higashigaki, Yoshiyuki; and Harada, Shigeo, 4,623,425, Cl. 156-613.000.

Higgins, David T.: *See*—
Chappell, William A.; Higgins, David T.; Reynolds, Michael; and Tweed, William J., 4,622,889, Cl. 99-312.000.

Highnote, Sidney T. Constant temperature fryer/cooker assembly. 4,623,544, Cl. 426-233.000.

Higuchi, Tomoyuki: *See*—
Imada, Yusuke; Hiroe, Isamu; Higuchi, Tomoyuki; Kato, Seiichi; and Tanino, Masahiro, 4,622,886, Cl. 91-520.000.

Hihara, Toshio: *See*—
Niwa, Toshio; Himeno, Kiyoshi; and Hihara, Toshio, 4,623,719, Cl. 534-636.000.

Hijiya, Hiromi: *See*—
Nakamura, Satoshi; Hijiya, Hiromi; and Miyake, Toshio, 4,623,394, Cl. 106-122.000.

Hill, Stephen, to Grass Valley Group, Inc., The. Actuator mechanism. 4,622,861, Cl. 74-531.000.

Hillesheim, Axel P.; and Bray, Andrew M. Arrow master-straightener/-conditioner. 4,623,410, Cl. 156-64.000.

Himeno, Kiyoshi: *See*—
Niwa, Toshio; Himeno, Kiyoshi; and Hihara, Toshio, 4,623,719, Cl. 534-636.000.

Hines, William L.: *See*—
Stinson, Michael K.; Hines, William L.; and Hesser, David J., 4,623,841, Cl. 324-223.000.

Hinkley, Charles H., to Branson Ultrasonics Corporation. Anvil for ultrasonic slitting apparatus. 4,623,420, Cl. 156-515.000.

Hinshaw, Gary D.: *See*—
Nebgen, John W.; and Hinshaw, Gary D., 4,623,435, Cl. 204-148.000.

Hirai, Shouichi: *See*—
Watanabe, Sadakazu; Shinoda, Hidenori; Nitta, Tsuneo; Takebayashi, Yoichi; Hirai, Shouichi; Sakata, Tomio; Uehara, Kensuke; Takahashi, Yasuo; and Asada, Haruo, 4,624,011, Cl. 381-43.000.

Hirao, Toshihiko: *See*—
Nakanishi, Toshihide; Azuma, Tomoki; Hirao, Toshihiko; Hattori, Kiyoji; and Sakurai, Minoru, 4,623,623, Cl. 435-115.000.

Hirata, Nobuyuki: *See*—
Hayashi, Kiyoshi; Hori, Setsuo; Hirata, Nobuyuki; Kobayashi, Kazuhiro; and Mizuno, Masayuki, 4,623,242, Cl. 355-14.00R.

Hiroe, Isamu: *See*—
Imada, Yusuke; Hiroe, Isamu; Higuchi, Tomoyuki; Kato, Seiichi; and Tanino, Masahiro, 4,622,886, Cl. 91-520.000.

Hirose, Tsuguhiro: *See*—
Kobayashi, Hiroshi; Haruyama, Hideaki; and Hirose, Tsuguhiro, 4,623,998, Cl. 370-85.000.

Hirsch, Lee: *See*—
Allen, Michael; and Hirsch, Lee, 4,623,990, Cl. 365-189.000.

Hirschbuehler, Kevin; and Kohli, Dalip K., to American Cyanamid Company. Curable epoxy resin compositions. 4,623,681, Cl. 523-468.000.

Hisajima, Masahiko: *See*—
Irie, Yoichiro; Kimura, Hiroshi; Hisajima, Masahiko; Shibata, Kiyoshi; and Yoshikawa, Yasuhiko, 4,623,137, Cl. 271-160.000.

Hitachi Chemical Co., Ltd.: *See*—
Kahara, Toshiki; Matsuda, Shinpei; Ishii, Kenzo; Takeuchi, Seizi; Imahashi, Jinichi; and Honji, Akio, 4,623,415, Cl. 156-325.000.
Hitachi, Ltd.: *See*—
Kahara, Toshiki; Matsuda, Shinpei; Ishii, Kenzo; Takeuchi, Seizi; Imahashi, Jinichi; and Honji, Akio, 4,623,415, Cl. 156-325.000.
Mitsuoka, Katsuya; Narishige, Shinji; Kumagai, Akira; Sano, Masaaki; Hara, Shinichi; and Hanazono, Masanobu, 4,623,439, Cl. 204-192.200.
Miyagaki, Hisanori; Higashi, Toshihiko; Yokogawa, Atsushi; Shimada, Yoshihiro; Kurihara, Nobuo; Nishikawa, Mitsuyo; Sato, Yoshio; Watanabe, Aisumi; and Morooka, Yasuo, 4,622,922, Cl. 122-449.000.
Someya, Kazuo; Kita, Osamu; and Tomomura, Masaomi, 4,623,524, Cl. 423-245.000.
Yamazaki, Eiichi, 4,623,818, Cl. 313-408.000.
Hitachi Metals, Ltd.: *See*—
Iimura, Tsutomu; and Chinju, Minoru, 4,623,603, Cl. 430-108.000.
Hitco: *See*—
Petersen, Robert B., 4,623,735, Cl. 549-206.000.
Hitt, Dale. Boring bar and measuring device therefor. 4,623,286, Cl. 408-116.000.
Hobson, Donald E., to Dana Corporation. Transfer gear assembly. 4,622,859, Cl. 74-15.880.
Hochiki Corporation: *See*—
Shima, Hiroshi; and Honma, Hiroshi, 4,623,876, Cl. 340-539.000.
Hodes, Erich; and Wegner, Karl-Heinz, to Glyco-Metall-Werke, Daelen & Loos GmbH. Composite material, especially for plain bearings. 4,623,590, Cl. 428-408.000.
Hodges, Steven E.: *See*—
Kern, Mark T.; and Hodges, Steven E., 4,623,788, Cl. 250-227.000.
Hoechst Aktiengeselleschaft: *See*—
Geiger, Rolf; Gerhards, Hermann; and Kruse, Hansjorg, 4,623,715, Cl. 530-330.000.
Hoechst Aktiengesellschaft: *See*—
Kastl, Erna; Klenk, Ludwig; Faust, Horst; and Stenger, Karl, 4,623,566, Cl. 428-36.000.
Keller, Reinhold; and Schlingmann, Merten, 4,623,723, Cl. 536-27.000.
Schmierer, Roland; Handte, Reinhard; Mildenberger, Hilmar; Bauer, Klaus; Bieringer, Hermann; and Burstell, Helmut, 4,623,380, Cl. 71-92.000.
Siegemund, Gunter; and Schwertfeger, Werner, 4,623,491, Cl. 260-544.00F.
Vertesy, Laszlo ; Tripier, Dominique; and Ritzel, Harald, 4,623,714, Cl. 530-324.000.
Hoechst-Roussel Pharmaceuticals Inc.: *See*—
Glamkowski, Edward J.; and Ehrgott, Frederick J., Jr., 4,623,657, Cl. 514-462.000.
Hoefer, Rainer; Schmid, Karl-Heinz; and Ackermann, Karl-Heinz, to Henkel Kommanditgesellschaft auf Aktien. Acrylate hydrosols. 4,623,695, Cl. 524-747.000.
Hoffman, Mary V.; and Paynter, John, to General Electric Company. Fluorescent lamp using multi-layer phosphor coating. 4,623,816, Cl. 313-487.000.
Hoffmann-La Roche Inc.: *See*—
Hassall, Cedric H.; Johnson, William H.; and Roberts, Noel A., 4,623,639, Cl. 514-18.000.
Pesitka, Sidney, 4,623,621, Cl. 435-7.000.
Hoffrichter, Ingo; and Jung, Eggert, to Dr. Ing. Rudolf Hell GmbH. Method and apparatus for the recognition of hues and colors. 4,623,973, Cl. 364-526.000.
Hofke, Fred; and Margolin, Irwin, to Revlon, Inc. Device and method for determining skin type. 4,623,793, Cl. 250-341.000.
Hogan, Wayne C., Sr. Twist-tightened electrical terminal connector. 4,623,212, Cl. 339-236.000.
Holay, Sanjay H.; Kirkwood, James R.; and Raniwala, Subodh K., to Quaker Oats Company, The. Method for manufacturing crisp rice. 4,623,546, Cl. 426-448.000.
Holden, M. James, to Mobil Oil Corporation. Reinforced packaging tray. 4,623,088, Cl. 229-2.50R.
Holldorff, Gunther, to Borsig GmbH. Absorption refrigeration system with separate high- and low-pressure sections and method of operating such a system. 4,622,830, Cl. 62-238.300.
Hollenbeck, Keith E., to Spectrex Corporation. Particulate counter. 4,623,252, Cl. 356-338.000.
Holliger, Herbert, to Sandoz Ltd. 1:2 metal complexes of AZO compounds having a central substituted phenylenesulfonylaminophenylene radical. 4,623,720, Cl. 534-700.000.
Holloway, Michael: *See*—
Steen, Grant F.; and Holloway, Michael, 4,623,752, Cl. 174-35.0GC.
Hollymatic AG. Ingenbohl: *See*—
Bollinger, Rudolf, 4,622,717, Cl. 17-32.000.
Holmwood, Graham: *See*—
Brandes, Wilhelm; Hanssler, Gerd; Reinecke, Paul; Scheinpflug, Hans; and Holmwood, Graham, 4,623,653, Cl. 514-383.000.
Holstedt, Richard A.; and Jessup, Peter, to Union Oil Company of California. Oxidation and corrosion inhibitors for boron-containing lubricants. 4,623,474, Cl. 252-47.500.
Hombach, Rudolf: *See*—
Henning, Wolfgang; Hombach, Rudolf; Meckel, Walter; and Reiff, Helmut, 4,623,416, Cl. 156-331.700.
Honda Giken Kogyo K K.: *See*—
Nishikawa, Masao, 4,623,053, Cl. 192-0.033.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Fujimori, Yoshitsugu; Adachi, Ryouhei; Ebisawa, Hiroo; Kikuchi, Nobuo; and Wada, Tsuneyuki, 4,623,190, Cl. 296-198.000.
Fukuo, Koichi; and Yamamoto, Hiroki, 4,622,933, Cl. 123-196.00R.
Irimajiri, Shoichiro; Kosuge, Yutaka; and Nakamura, Shigehira, 4,623,870, Cl. 340-52.00F.
Matsubayashi, Shinji; Kajikawa, Tsuneo; and Arai, Shokichi, 4,623,167, Cl. 280-798.000.
Honda Giken Koygo Kabushiki Kaisha: *See*—
Oyama, Kazuo, 4,622,934, Cl. 123-197.0AC.
Honeywell Inc.: *See*—
Orbach, Zvi, 4,623,923, Cl. 358-166.000.
Westley, Curtis E., 4,623,809, Cl. 310-49.00R.
Honji, Akio: *See*—
Kahara, Toshiki; Matsuda, Shinpei; Ishii, Kenzo; Takeuchi, Seizi; Imahashi, Jinichi; and Honji, Akio, 4,623,415, Cl. 156-325.000.
Honjo, Masahiro: *See*—
Matsumoto, Tokikazu; Honjo, Masahiro; and Kobayashi, Masaaki, 4,623,940, Cl. 360-10.300.
Honma, Hiroshi: *See*—
Shima, Hiroshi; and Honma, Hiroshi, 4,623,876, Cl. 340-539.000.
Hoogovens Groep B.V.: *See*—
Groothuizen, Jan C., 4,623,561, Cl. 427-275.000.
Hopeman Brothers, Inc.: *See*—
Salminen, Arthur H., 4,622,911, Cl. 114-71.000.
Horbrugger, Karl; and Schlotter, Jurgen, to Otis Elevator Company. Elevator load measuring. 4,623,041, Cl. 187-29.00R.
Hori, Mitsuaki: *See*—
Handa, Masao; Ueki, Mikio; Tokuya, Tomohiko; Hori, Mitsuaki; Yasuoka, Hidenori; Sato, Toshio; Ichihara, Takuzo; and Toyama, Kenichi, 4,623,173, Cl. 285-333.000.
Hori, Setsuo: *See*—
Hayashi, Kiyoshi; Hori, Setsuo; Hirata, Nobuyuki; Kobayashi, Kazuhiro; and Mizuno, Masayuki, 4,623,242, Cl. 355-14.00R.
Horii, Satoshi: *See*—
Higashide, Eiji; and Horii, Satoshi, 4,623,733, Cl. 548-542.000.
Hormel, Ronald F. Simplified calibration technique and auto ranging circuit for an electronic compass control circuit. 4,622,843, Cl. 73-1.00E.
Hoshino, Kunihisa, to Nippon Kogaku K. K. Solid state image pickup apparatus. 4,623,927, Cl. 358-213.000.
Hoshino, Osamu: *See*—
Tanaka, Kiyoharu; Ohno, Akio; Murayama, Yasushi; Hoshino, Osamu; and Takada, Yusaku, 4,622,916, Cl. 118-688.000.
Hoshizaki Electric Co., Ltd.: *See*—
Tsukiyama, Yasumitsu; Kito, Yoshikazu; Hida, Junichi; and Tatematsu, Susumu, 4,622,826, Cl. 62-137.000.
Hosogai, Kozo, to Fuji Xerox Co., Ltd. Process of forming a photoresist pattern and apparatus for correcting the pattern. 4,623,607, Cl. 430-312.000.
Hospal Industrie: *See*—
Vantard, Georges; Clement, Gilbert; and Vasseur, Jean-Pierre, 4,623,450, Cl. 210-87.000.
Hospital Corporation of Lanier, Inc.: *See*—
Spriggs, Willie Jo, 4,622,699, Cl. 2-114.000.
Hossom, Miles G.; and Jacob, Dinesh A., to Murex Corporation. Transverse flow diagnostic device. 4,623,461, Cl. 210-445.000.
Hotchiss-Brandt-Sogeme-H.B.S.: *See*—
Allio, Roland; Del Fabbro, Gilbert; Debrabant, Francois; and Gillet, Francois, 4,623,140, Cl. 271-305.000.
Hotta, Yuji: *See*—
Koshizuka, Kunihiro; Abe, Takao; Kitamura, Shigehiro; Nakamura, Masaki; Hotta, Yuji; and Ishii, Fumio, 4,623,580, Cl. 428-216.000.
Hough, William C., Jr., to Apple Adhesives, Inc. Article clamp. 4,623,102, Cl. 248-68.100.
Houston, Roy A. Container carrying means. 4,623,184, Cl. 294-87.100.
Howard, John. Open-closed sign. 4,622,770, Cl. 40-491.000.
Howell, William R., Jr.: *See*—
Bedell, Stephen A.; Coleman, William M., III; and Howell, William R., Jr., 4,623,707, Cl. 526-142.000.
HR Textron Inc.: *See*—
Zlotski, William J., 4,622,989, Cl. 137-315.000.
Hsiue, Eric S.; Ziatyk, Daniel; Stone, George R.; and DeBona, Bruce T., to Allied Corporation. Circuit board made from cross-linked polycyanurate polymer, thermoplastic polymer and polyaramid fiber. 4,623,577, Cl. 428-209.000.
Huang, Chun-Ming; and Cohen, Stanley N., to Cetus Corporation. Monoclonal antibody having specificity for the double-stranded conformation of native DNA and diagnostic methods using same. 4,623,627, Cl. 435-240.000.
Hubele, Adolf, to Ciba-Geigy Corporation. 8-hydroxy-quinoline derivatives for the protection of cultivated plants. 4,623,727, Cl. 546-178.000.
Huber, Manfred: *See*—
Kolblin, Rolf; and Huber, Manfred, 4,622,734, Cl. 29-568.000.
Huber, Walter: *See*—
Kraus, Gerold; Huber, Walter; Hack, Joachim; Schulze-Berge, Klaus; and Sold, Roland, 4,623,942, Cl. 360-75.000.
Hudock, John S., to Westinghouse Electric Corp. U.V. cured flexible polyester-monoacrylate protective thermistor coatings having good edge coverage and method of coating. 4,623,559, Cl. 427-54.100.
Huggins, Orville C., to Monarch Marking Systems, Inc. Printing apparatus. 4,623,103, Cl. 242-71.800.

Hughes Aircraft Company: *See*—
DuPont, Preston S.; Ritter, Robert E.; and Stafford, John P., 4,623,951, Cl. 361-218.000.
Lee, Kuan M.; Chu, Ruey S.; Wong, Nam S.; Clark, James U.; and Tang, Raymond, 4,623,894, Cl. 343-700.0MS.
Peters, John W., 4,623,426, Cl. 156-614.000.
Hughes, Donald R. Key assembly. 4,622,834, Cl. 70-395.000.
Hurley, James R.; Birkner, Joseph R.; and Nunes, Maurice, to Thermo Electron Corporation. Jet impingement/radiation gas-fired cooking range. 4,622,946, Cl. 126-39.00E.
Hurnik, Helmut; Grogler, Gerhard; Hess, Heinrich; and Kopp, Richard, to Bayer Aktiengesellschaft. Storage stable compositions based on polyvinyl chloride plastisols and stabilized isocyanates. 4,623,686, Cl. 524-101.000.
Hutchinson: *See*—
Ray, Jean, 4,623,135, Cl. 267-140.100.
Hutchison, Samuel A., to Elmwood Sensors, Inc. Cap and bracket assembly for thermostatic switch and method of manufacturing same. 4,623,866, Cl. 337-380.000.
Huth, Andreas; Schmiechen, Ralph; Rahtz, Dieter; Seidelmann, Dieter; and Braestrup, Claus T., to Schering Aktiengesellschaft. Substituted β-carbolines, and use thereof as medicinal agents. 4,623,649, Cl. 514-292.000.
Hutten, James E., to Ghent Manufacturing Inc. Clamp. 4,623,169, Cl. 281-45.000.
Huybrechts, Jozef T.; and Timmerman, August T., to Du Pont de Nemours, E. I., and Company. Conductive primers. 4,623,481, Cl. 252-511.000.
Huybrechts, Jozef T.; and McKeen, Lawrence W., to Du Pont de Nemours, E. I., and Company. Coated microwave cookware. 4,623,565, Cl. 428-35.000.
Hyatt, Charles J.: *See*—
McGuire, Kenneth J.; Dahlberg, John R.; and Hyatt, Charles J., 4,623,296, Cl. 414-730.000.
Hyde, James S.: *See*—
Mehdizadeh, Mehrdad; Froncisz, Wojciech; and Hyde, James S., 4,623,835, Cl. 324-58.50R.
Hyosu, Yoshihiko: *See*—
Takagiwa, Hiroyuki; Thuzita, Kenzi; Yamakawa, Goichi; Tomono, Makoto; Wakimoto, Saburo; Miyahara, Sadayasu; Ishida, Tetsumasa; Hyosu, Yoshihiko; and Wada, Tsuneo, 4,623,604, Cl. 430-109.000.
Iai, Hidehito: *See*—
Yamamoto, Ryuzo; Mori, Kihei; Omoto, Yorihiko; Iai, Hidehito; and Kikuchi, Toru, 4,623,571, Cl. 428-68.000.
Ibata, Akihiko; and Sakamoto, Yoichi, to Matsushita Electric Industrial Company, Limited. Method for making permanent magnets of Mn-Al-C alloys. 4,623,404, Cl. 148-101.000.
Ibrahim, Aftab. Pick-up truck insert. 4,623,187, Cl. 296-39.00R.
Ichihara, Takuzo: *See*—
Handa, Masao; Ueki, Mikio; Tokuya, Tomohiko; Hori, Mitsuaki; Yasuoka, Hidenori; Sato, Toshio; Ichihara, Takuzo; and Toyama, Kenichi, 4,623,173, Cl. 285-333.000.
Ichihashi, Hiroo; Toganoh, Shigeo; and Matsufuji, Yohji, to Canon Kabushiki Kaisha. Liquid supply appa tus. 4,623,905, Cl. 346-140.00R.
Ichikawa, Kenji: *See*—
Toda, Masumi; Mori, Masashi; Nonaka, Shingo; Kyoden, Hiroshi; Ichikawa, Kenji; and Hamazaki, Yoshihisa, 4,623,393, Cl. 106-38.220.
Ida, Mitsuru, to Sony Corporation. Mode changing mechanism for cassette tape recording and/or reproducing apparatus. 4,623,946, Cl. 360-96.300.
Ide, Keiichiro, to Takeda Riken Kogyo Kabushikikaisha. Multi-clock generator. 4,623,845, Cl. 328-60.000.
Idemitsu Petrochemical Co., Ltd.: *See*—
Ito, Masakazu; and Kawamura, Shinji, 4,623,587, Cl. 428-335.000.
Igarashi, Yoshiaki: *See*—
Oshima, Mitsuaki; Izaki, Masataka; Kajino, Jirou; Igarashi, Yoshiaki; and Mitani, Hiroshi, 4,623,930, Cl. 358-222.000.
Ihara, Susumu; and Tsunoda, Shinji, to Sumitomo Electric Industries, Ltd. Transmission line control system with by-pass control. 4,623,884, Cl. 340-825.050.
Iijima, Toshiyuki; Kina, Hedeki; and Nanba, Masaharu, to Fuji Electric Co., Ltd.; and Fuji Electric Corporate Research & Development Limited. Apparatus for improving the performance of non-crystalline silicon photosensitive material in an electronic copier. 4,623,243, Cl. 355-15.000.
Iimura, Tsutomu; and Chinju, Minoru, to Hitachi Metals, Ltd. Spherical , electrophotographic magnetoplumbite-type hexagonal ferrite carrier powder. 4,623,603, Cl. 430-108.000.
Iizuka, Kinji; Kamijo, Tetsuhide; Yamamoto, Ryoji; and Harada, Hiromu, to Kissei Pharmaceutical Co., Ltd. Method for the production of nuclear substituted cinnamoylanthranilic acid salts. 4,623,724, Cl. 544-107.000.
Ikeda, Masato; and Kurokawa, Kenji, to Shionogi & Co., Ltd. Fiberoptic probe for brain scanning with detachable cannula guide. 4,623,789, Cl. 250-227.000.
Ikenaga, Osamu; and Yoshikawa, Ryoichi, to Kabushiki Kaisha Toshiba. Apparatus for inspecting mask used for manufacturing integrated circuits. 4,623,256, Cl. 356-394.000.
Imada, Yusuke; Hiroe, Isamu; Higuchi, Tomoyuki; Kato, Seiichi; and Tanino, Masahiro. Hydraulic control circuit system. 4,622,886, Cl. 91-520.000.
Imahashi, Jinichi: *See*—
Kahara, Toshiki; Matsuda, Shinpei; Ishii, Kenzo; Takeuchi, Seizi; Imahashi, Jinichi; and Honji, Akio, 4,623,415, Cl. 156-325.000.
Imai, Masanori: *See*—
Noda, Yuzuru; and Imai, Masanori, 4,623,563, Cl. 427-379.000.
IMO AB: *See*—
Segerstrom, Lars; H., 4,623,305, Cl. 417-365.000.
Imose, Kazuo, to Teijin Limited. Method and apparatus for measuring thickness of a film. 4,623,254, Cl. 356-381.000.
Imperial Chemical Industries PLC: *See*—
Cairns, John F., 4,623,440, Cl. 204-231.000.
Parry, Keith P.; Rathmell, William G.; and Worthington, Paul A., 4,623,654, Cl. 514-383.000.
Richardson, Dora N., 4,623,660, Cl. 514-514.000.
Inaba, Tsutomu: *See*—
Nakamura, Toshiyuki; Sugihara, Masahiro; Inaba, Tsutomu; and Kimura, Tadashi, 4,623,306, Cl. 418-55.000.
Inaga, Katsu; Uda, Nobuo; and Inoue, Tatsuo, to Sony Corporation. Portable video camera with image pick-up device. 4,623,931, Cl. 358-227.000.
Inagaki, Kunitoshi, to Kabushikikaisha Aichidenkikosakusho. Electric can opener. 4,622,749, Cl. 30-421.000.
Inco Alloys International, Inc.: *See*—
Jatkar, Arun D.; Varall, Alfred J., Jr.; and Schelleng, Robert D., 4,623,388, Cl. 75-232.000.
Index-Werke Komm.-Ges. Hahn & Tessky: *See*—
Trautmann, Gunther, 4,622,874, Cl. 82-24.00R.
Indoor Archery, Incorporated: *See*—
Paraskevakos, Theodore G., 4,623,145, Cl. 272-135.000.
Industrial Maintenance Systems, Inc.: *See*—
Zatezalo, John M.; and Spalla, Lucian J., 4,623,979, Cl. 364-715.000.
Ing. C. Olivetti & C., S.p.A.: *See*—
Conta, Renato; Perucca, Vincenzo; and Rocchi, Remo, 4,623,904, Cl. 346-140.00R.
Gubau, Jose , 4,623,273, Cl. 400-208.000.
Inoue, Tatsuo: *See*—
Inaga, Katsu; Uda, Nobuo; and Inoue, Tatsuo, 4,623,931, Cl. 358-227.000.
Inoue, Toshitsugu: *See*—
Okutani, Norio; Matsumura, Kenichi; and Inoue, Toshitsugu, 4,623,253, Cl. 356-375.000.
Inoue, Yoshio; Okami, Takehide; Yokoo, Koji; and Kinami, Hitoshi, to Shin-Etsu Chemical Co., Ltd. Room temperature-curable organopolysiloxane composition. 4,623,693, Cl. 524-700.000.
Inoue, Yuji; and Iwaoka, Hideto, to Yokogawa Hokushin Electric Corporation; and Yokogawa Medical Systems, Ltd. Magnetic field production coil for nuclear magnetic resonance imaging apparatus. 4,623,864, Cl. 335-299.000.
Inoue, Yuzuru; and Shinozaki, Takashi, to Victor Company of Japan, Ltd. Video camera having an automatic focusing system. 4,623,932, Cl. 358-227.000.
Inouye, Teruko K.: *See*—
Ackley, Donald E.; Engelmann, Reinhart W. H.; and Inouye, Teruko K., 4,623,427, Cl. 156-647.000.
Institut Francais du Petrole: *See*—
Larue, Joseph; and Rojey, Alexandre, 4,622,825, Cl. 62-102.000.
Institut Khimicheskoi Fiziki Akademii Nauk SSSR: *See*—
Maximov, Jury M.; Ziatdinov, Mansur K.; Kolmakov, Anatoly D.; Raskolenko, Larisa G.; Merzhanov, Alexandr G.; Borovinskaya, Inna P.; and Dubovitsky, Fedor I., 4,623,402, Cl. 148-20.300.
Institute of Science and Engineering Service, Inc.: *See*—
Fujimura, Tadato; and Fujii, Tsutomu, 4,623,840, Cl. 324-208.000.
Instrument AB Scanditronix: *See*—
Anderberg, Bengt; and Eriksson, Mikael, 4,623,847, Cl. 328-234.000.
Integrated Automation Limited: *See*—
Bok, Edward, 4,622,918, Cl. 118-718.000.
Interaction Systems, Inc.: *See*—
Marino, Michael J., 4,623,757, Cl. 178-18.000.
International Business Machines: *See*—
Bresenham, Jack E.; Gay, Adrian C.; and Richards, John P., 4,623,880, Cl. 340-723.000.
International Business Machines Corporation: *See*—
Andrews, Donald R.; Kuseski, Roger E.; and Travis, Terence, 4,623,244, Cl. 355-24.000.
Chandrashekhar, G. V.; and Shafer, Merrill W., 4,623,906, Cl. 346-140.00R.
Getz, Marion E.; Harris, Christopher J.; McConnell, Philip J.; Norton, Mark L.; Garrett, John P.; and Harding, Angela I., 4,623,964, Cl. 364-401.000.
Kaschak, Ronald A.; Magnuson, Roy H.; and Yarmchuk, Edward J., 4,623,554, Cl. 427-8.000.
Phillips, Grady H., 4,623,963, Cl. 364-300.000.
International Diffusion Consommateur: *See*—
Pillot, Bernard, 4,623,194, Cl. 297-316.000.
International Flavors & Fragrances Inc.: *See*—
Evers, William J.; Stork, Gilbert; Mookherjee, Braja D.; and Heinsohn, Howard H., Jr., 4,623,749, Cl. 560-262.000.
Pittet, Alan O.; Muralidhara, Ranya; Miller, Kevin P.; and Luccarelli, Domenick, Jr., 4,623,538, Cl. 424-52.000.
Pittet, Alan O.; Muralidhara, Ranya; Miller, Kevin P.; Luccarelli, Domenick, Jr.; and Vock, Manfred H., 4,623,547, Cl. 426-535.000.
International Manufacturing and Water Vending Company: *See*—
Hamlin, Jerry J., 4,623,467, Cl. 210-652.000.

International Metals Reclamation Co., Inc.: *See*—
MacDougall, John; and Pargeter, John K., 4,622,905, Cl. 110-347.000.

International Telephone and Telegraph Corporation: *See*—
Vensko, George; Carlin, Lawrence; Nelson, Mark W.; and Smith, A. Richard, 4,624,008, Cl. 381-43.000.

InterNorth, Inc.: *See*—
Provencher, Gerald M., 4,623,822, Cl. 315-39.000.

Inventio AG: *See*—
Rulke, Gerhart, 4,623,060, Cl. 198-495.000.

Iori, Giuseppe: *See*—
Romano, Ugo; and Iori, Giuseppe, 4,623,705, Cl. 526-75.000.

Iowa Mold Tooling Co., Inc.: *See*—
Hejlik, Larry J., 4,623,067, Cl. 212-188.000.

Irani, Cyrus A.; Cozewith, Charles; and Kasegrande, Stephen S., to Exxon Research & Engineering Co. Method for high temperature phase separation of solutions containing polymers. 4,623,712, Cl. 528-498.000.

Irie, Yoichiro; Kimura, Hiroshi; Hisajima, Masahiko; Shibata, Kiyoshi; and Yoshikawa, Yasuhiko, to Mita Industrial Co., Ltd. Paper feeder equipped with copying paper cassettes. 4,623,137, Cl. 271-160.000.

Irimajiri, Shoichiro; Kosuge, Yutaka; and Nakamura, Shigehira, to Honda Giken Kogyo Kabushiki Kaisha. Vehicle display device. 4,623,870, Cl. 340-52.00F.

Irrlitz, Hans U.; Kick, Werner; and Sommer, Hans, to Flachglas AG. Method and apparatus for producing textured napped surfaces. 4,623,572, Cl. 428-90.000.

Ise, Yoji; and Konishi, Tomeo, to Tokuken Ltd. Center chuck assembly. 4,623,154, Cl. 279-1.00L.

Ishida, Tetsumasa: *See*—
Takagiwa, Hiroyuki; Thuzita, Kenzi; Yamakawa, Goichi; Tomono, Makoto; Wakimoto, Saburo; Miyahara, Sadayasu; Ishida, Tetsumasa; Hyosu, Yoshihiko; and Wada, Tsuneo, 4,623,604, Cl. 430-109.000.

Ishihara, Shoichi: *See*—
Kono, Masao; Komeno, Taichitro; Ishihara, Shoichi; Yamauchi, Akira; and Okabayashi, Tadashi, 4,623,485, Cl. 540-92.000.

Ishii, Fumio: *See*—
Koshizuka, Kunihiro; Abe, Takao; Kitamura, Shigehiro; Nakamura, Masaki; Hotta, Yuji; and Ishii, Fumio, 4,623,580, Cl. 428-216.000.

Ishii, Hiroyuki: *See*—
Asano, Junichi; Ishii, Hiroyuki; and Kosugiyama, Otoya, 4,623,938, Cl. 358-285.000.

Ishii, Kenzo: *See*—
Kahara, Toshiki; Matsuda, Shinpei; Ishii, Kenzo; Takeuchi, Seizi; Imahashi, Jinichi; and Honji, Akio, 4,623,415, Cl. 156-325.000.

Ishikawa, Masao; Koboshi, Shigeharu; and Kuse, Satoru, to Konishiroku Photo Industry Co., Ltd. Method of processing light-sensitive silver halide photographic material. 4,623,613, Cl. 430-428.000.

Ishikawa, Norio: *See*—
Taniguchi, Nobuyuki; Ishikawa, Norio; Akada, Yasuaki; Egawa, Takeshi; and Kawamura, Kunio, 4,623,238, Cl. 354-406.000.

Ishikawa, Youhei: *See*—
Nishikawa, Toshio; Ishikawa, Youhei; Wada, Hidekazu; and Takehara, Koichi, 4,623,857, Cl. 333-219.000.

Ishimori, Akira: *See*—
Yamamoto, Takashi; and Ishimori, Akira, 4,622,971, Cl. 128-395.000.

Ishizaki, Keiichi, to Fuji Photo Film Co., Ltd. Method and apparatus for coating a substrate. 4,623,501, Cl. 264-171.000.

Ishizawa, Tadao; Kotaka, Hirofumi; and Kakinuma, Masami, to Seiko Seiki Kabushiki Kaisha. Gas refrigerator. 4,622,823, Cl. 62-6.000.

Islam, Mohammad A.: *See*—
Stevenson, David; and Islam, Mohammad A., 4,623,716, Cl. 530-333.000.

Isogawa, Toshiaki: *See*—
Sato, Joichi; Shiono, Ryuji; Nimura, Tsutomu; Isogawa, Toshiaki; and Sato, Mitsuru, 4,623,933, Cl. 358-228.000.

Ito, Chihiro, to Murata Kikai Kabushiki Kaisha. Lathe. 4,622,872, Cl. 82-2.00R.

Ito, Eiji: *See*—
Yamada, Minoru; Ito, Eiji; and Nagai, Masaru, 4,623,233, Cl. 354-229.000.

Ito, Hiroshi; Yamada, Shigemichi; and Akashi, Teruo, to Toyota Jidosha Kabushiki Kaisha. Transmission and transmission control device for providing downshifting. 4,622,866, Cl. 74-866.000.

Ito, Kazuhiko: *See*—
Utagawa, Ikuo; and Ito, Kazuhiko, 4,623,766, Cl. 200-85.00R.

Ito, Masakazu; and Kawamura, Shinji, to Idemitsu Petrochemical Co., Ltd. Multi-layer film or sheet material. 4,623,587, Cl. 428-335.000.

Ito, Norifumi, to Ricoh Company, Ltd. Device for controlling motor rotation speed. 4,623,827, Cl. 318-341.000.

Ito, Osamu; Mizutani, Hiroshi; and Nishizawa, Kazunori, to Kao Corporation. Disposable diaper. 4,623,342, Cl. 604-385.00A.

Ito, Shin'ichi: *See*—
Abe, Syuzi; and Ito, Shin'ichi, 4,622,759, Cl. 34-44.000.

Ito, Shuji: *See*—
Mukai, Fumiaki; and Ito, Shuji, 4,623,935, Cl. 358-280.000.

Ito, Takashi: *See*—
Shibata, Shinich; and Ito, Takashi, 4,623,008, Cl. 141-89.000.

Itoh, Hiroshi; and Takada, Mitsuru, to Toyota Jidosha Kabushiki Kaisha. Apparatus for controlling continuously variable transmission when accelerating from low speeds. 4,622,865, Cl. 74-866.000.

Itoh, Hiroshi; Ohmi, Shinya; Suzuki, Yasutoshi; Fukada, Tsuyoshi; and Hara, Kunihiko, to Nippondenso Co., Ltd. Liquid crystal type dazzle-free transmissive-reflective mirror. 4,623,222, Cl. 350-331.00T.

Itoh, Shunichi, to Nikken Industries Corp. Spring drive. 4,623,039, Cl. 185-39.000.

ITT Corporation: *See*—
Gambetta, David L., 4,623,122, Cl. 251-328.000.

ITT Industries, Inc.: *See*—
Bischoff, Gilbert; Muller, Reiner; and Gath, Dietmar, 4,622,882, Cl. 91-369.00R.

Ivanov, Mikhail G.; Golov, Veniamin G.; Kuzmin, Vladimir N.; Alyakrinskaya, Aida I.; Mushy, Roman Y.; Kovalev, Alexei D.; Shutova, Nadezhda V.; Rodionov, Jury A.; Molev, Igor I.; Yakovleva, Ljudmila S.; Berezin, Vitaly B.; Petrashko, Alexei I.; Shuev, Gennady M.; Bukin, Boris A.; Belkina, Tamara M., deceased; and by Belkin, Naum S., administrator. Polyisocyanate derivatives wherein the isocyanate group(s) is/are reversibly blocked, by 3-methylpyrazol-1H-yl. 4,623,731, Cl. 548-374.000.

Iwaoka, Hideto: *See*—
Inoue, Yuji; and Iwaoka, Hideto, 4,623,864, Cl. 335-299.000.

Iwasaki, Youichi: *See*—
Kaneda, Naoya; Iwasaki, Youichi; and Tohyama, Masamichi, 4,623,237, Cl. 354-403.000.

Iwata, Yasuji: *See*—
Sasaki, Noboru; Iwata, Yasuji; and Mukai, Teruo, 4,622,839, Cl. 72-138.000.

Izaki, Masataka: *See*—
Oshima, Mitsuaki; Izaki, Masataka; Kajino, Jirou; Igarashi, Yoshiaki; and Mitani, Hiroshi, 4,623,930, Cl. 358-222.000.

J. I. Case Company: *See*—
Johnson, Orlin W.; Larson, Michael P.; Benson, Richard E.; Kerber, Dathan R.; and Cross, Jon R., 4,622,805, Cl. 56-14.300.
Lech, Richard J., 4,622,803, Cl. 56-10.200.

J & L Importers, Inc.: *See*—
Oh, Chang H., 4,622,948, Cl. 126-390.000.

J. M. Huber Corporation: *See*—
Kostinko, John A., 4,623,631, Cl. 502-60.000.

Jabami, Ryozo; Hamaguchi, Akira; Matsuda, Shigeru; and Ejima, Yasuyuki, to Matsushita Electric Industrial Co., Ltd. Control apparatus for an air conditioner. 4,622,827, Cl. 62-158.000.

Jackson, Anthony. Apparatus and methods for detecting probe penetration of human internal target tissue having predetermined internal pressure. 4,623,335, Cl. 604-118.000.

Jackson, Byron R. Exercise device. 4,623,146, Cl. 272-137.000.

Jackson, Winston J., Jr.: *See*—
Darnell, William R.; and Jackson, Winston J., Jr., 4,623,675, Cl. 521-180.000.

Jacob, Dinesh A.: *See*—
Hossom, Miles G.; and Jacob, Dinesh A., 4,623,461, Cl. 210-445.000.

Jacob, Lutz E.; Lepert, Andre ; and Evans, Morris L., to Exxon Research & Engineering Co. Tackifiers and their use in pressure sensitive adhesives. 4,623,698, Cl. 525-221.000.

Jahn, Dieter; Becker, Rainer; Goetz, Norbert; Keil, Michael; and Wuerzer, Bruno, to BASF Aktiengesellschaft. Pyridyl containing cyclohexane-1,3-dione derivatives and herbicidal use. 4,623,381, Cl. 71-94.000.

James C. Barber and Associates, Inc.: *See*—
Barber, James C., 4,623,528, Cl. 423-320.000.

James, John T.; Buettner, Leonard C.; and Genovese, James A., to United States of America, Army. Gas mask filters test apparatus using a breathing pump. 4,622,852, Cl. 73-865.600.

James, Miranda L.: *See*—
Boeckmann, Eduard F. B.; and James, Miranda L., 4,623,762, Cl. 379-393.000.

Jamesbury Corporation: *See*—
Donnelly, James F., 4,623,121, Cl. 251-306.000.

Jamison, Charles E.: *See*—
Felton, Clinton D.; Gibson, Baylor D.; Jamison, Charles E.; McWhorter, William O.; and Serad, George A., 4,623,438, Cl. 204-168.000.

Jamison, Warren E.; Stull, Dean P.; and Guzzetta, Franklin H., to Armco, Inc. Thermoset microporous polymer lubricating composition and method for forming the same. 4,623,472, Cl. 252-12.200.

Janisch, Douglas G., to Briggs & Stratton Corp. Low level lubricating oil detector. 4,622,935, Cl. 123-198.0DC.

Jankewitz, Axel, to A. W. Faber-Castell GmbH & Co. Applicator tip and cosmetic applicator provided therewith. 4,622,985, Cl. 132-88.500.

Janko, Bozidar; Franzen, Norman R.; and Bostwick, Myron A., Jr., to Tektronix, Inc. Accelerating and scan expansion electron lens means for a cathode ray tube. 4,623,819, Cl. 313-432.000.

Janome Sewing Machine Co., Ltd.: *See*—
Hanyu, Susumu; Takenoya, Hideaki; and Mishima, Fumiyuki, 4,623,275, Cl. 400-662.000.

Janome Sewing Machine Industry Co., Ltd.. *See*—
Ebata, Yoshikazu, 4,623,139, Cl. 271-272.000.

Janssen, Peter H.: *See*—
Vogler, Helmut J.; and Janssen, Peter H., 4,623,001, Cl. 137-625.460.

Japan Synthetic Rubber Co., Ltd.: *See*—
Harita, Yoshiyuki; Kamoshida, Yoichi; Takatori, Masashige; and Harada, Kunihiro, 4,623,609, Cl. 430-325.000.

Japka, Joseph E.; Staffin, Robert; and Bhatia, Swarnjeet S., to Procedyne Corp. Hard surface coatings for metals in fluidized beds. 4,623,400, Cl. 148-6.350.

Jatkar, Arun D.; Varall, Alfred J., Jr.; and Schelleng, Robert D., to Inco Alloys International, Inc. Process for producing composite material. 4,623,388, Cl. 75-232.000.

Jeol Ltd.: *See—*
Kondo, Yukihito, 4,623,783, Cl. 250-310.000.

Jessup, Peter: *See—*
Holstedt, Richard A.; and Jessup, Peter, 4,623,474, Cl. 252-47.500.

Jidosha Kiki Co., Ltd.: *See—*
Ohta, Ryuji; and Kobayashi, Michio, 4,623,044, Cl. 188-72.100.

Jimco Products, Inc.: *See—*
Peterson, James R., 4,622,887, Cl. 98-66.100.

Johansen, Kevin C.: *See—*
Vieau, Robert G.; Anderson, Truman A.; and Johansen, Kevin C., 4,622,781, Cl. 51-178.000.

Johansson, Jan E. Device for relieving floors on ground in buildings. 4,622,790, Cl. 52-169.500.

John Brown Inc.: *See—*
Benjamin, Kenneth A.; and Brouwer, Charles W., 4,623,826, Cl. 318-254.000.

John, Simon M.: *See—*
Traver, Frank J.; John, Simon M.; and Merrill, Duane F., 4,623,700, Cl. 525-478.000.

Johns Hopkins University, The: *See—*
Wozniak, John J., 4,622,970, Cl. 128-334.00R.

Johnson, David A.; and Shroyer, Richard A., to Eastman Kodak Company. Flash tube simmer circuitry for a film video player electronic strobe light. 4,623,929, Cl. 358-214.000.

Johnson, Orlin W.; Larson, Michael P.; Benson, Richard E.; Kerber, Dathan R.; and Cross, Jon R., to J. I. Case Company. Auger lift mechanism for crop harvesting header. 4,622,805, Cl. 56-14.300.

Johnson, Richard A.: *See—*
Salowe, Seymour; Elms, Robert T.; and Johnson, Richard A., 4,623,949, Cl. 361-63.000.

Johnson, Richard C., to United States of America, Army. Far-field nulling technique for reducing the susceptibility to cross-polarized signal in dual-polarized monopulse-type tracking antennas. 4,623,891, Cl. 342-361.000.

Johnson, Russell W.: *See—*
Lambert, Susan L.; Johnson, Russell W.; Lawson, Randy J.; and Barr, Tery L., 4,623,632, Cl. 502-74.000.

Johnson, Thomas H., to Shell Oil Company. Dialkyl adipate lubricants preparation using tantalum (V) halide/oxide-inorganic oxide catalysts. 4,623,748, Cl. 560-204.000.

Johnson, William H.: *See—*
Hassall, Cedric H.; Johnson, William H.; and Roberts, Noel A., 4,623,639, Cl. 514-18.000.

Johnston Pump/General Valve, Inc.: *See—*
van der Wiel, Hans M., 4,623,119, Cl. 251-163.000.

Jones, David W.; Langdon, Albert K.; Pruehs, Allen V.; and Robinson, Darrell A., to Ekstrom Industries. Electric meter socket repair kit and template for use therewith. 4,622,753, Cl. 33-189.000.

Jones, Howell A.: *See—*
Soderberg, John H.; Jones, Howell A.; Eckert, Alton B.; Duwel, Edward C.; and Nambudiri, Easwaran C. N., 4,623,987, Cl. 364-900.000.

Joubert, Roger D. Toddler bed construction utilizing crib converter kit. 4,622,705, Cl. 5-93.00R.

Joyner, Charles T.: *See—*
Harfenist, Morton; and Joyner, Charles T., 4,623,656, Cl. 514-437.000.

Juhl, Mark J. Free throw shooting practice device. 4,623,148, Cl. 273-1.50A.

Jung, Eggert: *See—*
Hoffrichter, Ingo; and Jung, Eggert, 4,623,973, Cl. 364-526.000.

Junginger, Erich; Hahn, Klaus; Schnaibel, Eberhard; and Schneider, Erich, to Robert Bosch GmbH. Electronic fuel controller for an automotive internal combustion engine. 4,622,936, Cl. 123-399.000.

Juraschek, Peter; and Nowak, Manfred, to Gebr. Happich GmbH. Height adjustable sun visor for automotive vehicles. 4,623,188, Cl. 296-97.00G.

Juso, Hiromi; Sudoh, Kengo; and Haikawa, Yukihiko, to Sharp Kabushiki Kaisha. PCM type record-playback system. 4,623,941, Cl. 360-18.000.

KabiVitrum AB: *See—*
Collen, Desire J., 4,623,718, Cl. 530-393.000.

Kabushiki Kaisha Daikin Seisakusho: *See—*
Ohkubo, Masahiro, 4,623,055, Cl. 192-85.0AA.

Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo: *See—*
Nakamura, Satoshi; Hijiya, Hiromi; and Miyake, Toshio, 4,623,394, Cl. 106-122.000.

Kabushiki Kaisha Ishida Koki Seisakusho: *See—*
Naito, Kazufumi; and Utsunomiya, Mitito, 4,623,813, Cl. 310-313.00R.

Kabushiki Kaisha Saginomiya Seisakusho: *See—*
Okada, Tomoo, 4,622,829, Cl. 62-216.000.

Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho: *See—*
Koide, Teruhiko; Kawaguchi, Teruhiko; Suzuki, Hideyuki; and Muraoka, Tsutomu, 4,623,192, Cl. 297-216.000.
Mori, Shinji, 4,623,104, Cl. 242-107.40R.

Kabushiki Kaisha Toshiba: *See—*
Abou, Shouji, 4,623,851, Cl. 331-111.000.
Abou, Shouji; and Chikaoka, Keiko, 4,623,852, Cl. 331-111.000.
Aoki, Hiroyuki, 4,623,978, Cl. 364-519.000.
Aomori, Koukichi, 4,623,183, Cl. 294-86.400.
Ikenaga, Osamu; and Yoshikawa, Ryoichi, 4,623,256, Cl. 356-394.000.
Kobayashi, Hiroshi; Haruyama, Hideaki; and Hirose, Tsuguhiro, 4,623,998, Cl. 370-85.000.
Matsuo, Satoshi; and Miyajima, Yasuo, 4,622,978, Cl. 128-663.000.
Nagashima, Masayoshi, 4,623,901, Cl. 346-76.0PH.
Saito, Hitoshi; Hatori, Hitoshi; and Matsubayashi, Kazuyuki, 4,623,034, Cl. 181-148.000.
Shingu, Shitta, 4,623,202, Cl. 310-90.500.
Urushibata, Yukio, 4,624,013, Cl. 382-9.000.
Watanabe, Junji, 4,623,900, Cl. 346-76.0PH.
Watanabe, Junji, 4,623,937, Cl. 358-285.000.
Yamanishi, Eiichi, 4,623,902, Cl. 346-76.0PH.

K.K. Tokyo Koki Seizosho: *See—*
Fujimura, Tadato; and Fujii, Tsutomu, 4,623,840, Cl. 324-208.000.

Kabushikikaisha Aichidenkikosakusho: *See—*
Inagaki, Kunitoshi, 4,622,749, Cl. 30-421.000.

Kachlic, Jerry D.: *See—*
Dambach, Philip J.; and Kachlic, Jerry D., 4,623,211, Cl. 339-143.00R.

Kadin, Saul B.; and Sarges, Reinhard, to Pfizer Inc. [1,2,4]Triazolo[4,3-a]quinoxaline-4-amine derivatives. 4,623,725, Cl. 544-346.000.

Kadokura, Kenji: *See—*
Kaneko, Yutaka; Kadokura, Kenji; and Kinura, Toshihiko, 4,623,617, Cl. 430-551.000.

Kadowaki, Takashi: *See—*
Takada, Shun; Kadowaki, Takashi; Sasaki, Masao; Nishijima, Toyoki; and Onodera, Kaoru, 4,623,616, Cl. 430-545.000.

Kaempfer, Knut: *See—*
Broecker, Franz J.; Gettert, Hans; and Kaempfer, Knut, 4,623,533, Cl. 423-573.00G.

Kaepa, Inc.: *See—*
Adams, Thomas M., 4,622,763, Cl. 36-50.000.

Kagabu, Shinzo: *See—*
Kurahashi, Yoshio; Shiokawa, Kozo; Goto, Toshio; Kagabu, Shinzo; Kamochi, Atsumi; Moriya, Koichi; and Hayakawa, Hidenori, 4,623,377, Cl. 71-92.000.

Kagami, Tomio, to Tokyo Shibaura Denki Kabushiki Kaisha. Method and apparatus for detecting the profile and feeding state of paper sheets. 4,623,975, Cl. 364-560.000.

Kahara, Toshiki; Matsuda, Shinpei; Ishii, Kenzo; Takeuchi, Seizi; Imahashi, Jinichi; and Honji, Akio, to Hitachi, Ltd.; and Hitachi Chemical Co., Ltd. Method of making fuel cell. 4,623,415, Cl. 156-325.000.

Kahng, Dawon: *See—*
Chang, Chuan C.; Kahng, Dawon; Kamgar, Avid; and Parrillo, Louis C., 4,623,912, Cl. 357-54.000.

Kainmuller, Thomas: *See—*
Breitenfellner, Franz; Leidig, Karl; and Kainmuller, Thomas, 4,623,562, Cl. 427-296.000.

Kaiser, Gunther: *See—*
Denz, Helmut; Etzold, Peter; Groschel, Wolfgang; Kaiser, Gunther; Kraemer, Heinz; Nitschke, Werner; and Zechnall, Martin, 4,623,974, Cl. 364-551.000.

Kajikawa, Tsuneo: *See—*
Matsubayashi, Shinji; Kajikawa, Tsuneo; and Arai, Shokichi, 4,623,167, Cl. 280-798.000.

Kajino, Jirou: *See—*
Oshima, Mitsuaki; Izaki, Masataka; Kajino, Jirou; Igarashi, Yoshiaki; and Mitani, Hiroshi, 4,623,930, Cl. 358-222.000.

Kakinuma, Masami: *See—*
Ishizawa, Tadao; Kotaka, Hirofumi; and Kakinuma, Masami, 4,622,823, Cl. 62-6.000.

Kakizaki, Katsumi; and Ajiro, Yutaka, to Tomy Kogyo Co. Inc. Flywheel controlled toy. 4,623,320, Cl. 446-462.000.

Kalvo-Vogler GmbH: *See—*
Vogler, Helmut J.; and Janssen, Peter H., 4,623,001, Cl. 137-625.460.

Kamaike, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Elevator control apparatus. 4,623,042, Cl. 187-29.00R.

Kamata, Shigeru, to Canon Kabushiki Kaisha. Zoom lens mounting. 4,623,227, Cl. 350-430.000.

Kamen, Melvin E.: *See—*
Ezrielev, Robert I.; Kamen, Melvin E.; and Petcen, Donald H., 4,623,708, Cl. 526-314.000.

Kamgar, Avid: *See—*
Chang, Chuan C.; Kahng, Dawon; Kamgar, Avid; and Parrillo, Louis C., 4,623,912, Cl. 357-54.000.

Kamijo, Tetsuhide: *See—*
Iizuka, Kinji; Kamijo, Tetsuhide; Yamamoto, Ryoji; and Harada, Hiromu, 4,623,724, Cl. 544-107.000.

Kamiyama, Yasuo, to Citizen Watch Co., Ltd. Electronic timepiece with a chronograph system. 4,623,260, Cl. 368-80.000.

Kamochi, Atsumi: *See—*
Kurahashi, Yoshio; Shiokawa, Kozo; Goto, Toshio; Kagabu, Shinzo; Kamochi, Atsumi; Moriya, Koichi; and Hayakawa, Hidenori, 4,623,377, Cl. 71-92.000.

Kamoshida, Yoichi: *See—*
Harita, Yoshiyuki; Kamoshida, Yoichi; Takatori, Masashige; and Harada, Kunihiro, 4,623,609, Cl. 430-325.000.

Kamoshita, Tomoyoshi, to Fuji Electric Corporate Research & Development Ltd. Cell stack for fuel cells. 4,623,596, Cl. 429-26.000.

Kanari, Mitsuru, to Alpine Electronics Inc. Mounting device of equipments for use on vehicles. 4,623,110, Cl. 248-27.100.

Kane, James G.: *See—*
Pedicano, James J.; Kane, James G.; and Pedicano, Ernest, 4,623,336, Cl. 604-192.000.

Kaneda, Naoya; Iwasaki, Youichi; and Tohyama, Masamichi, to Canon Kabushiki Kaisha. Automatic focusing device. 4,623,237, Cl. 354-403.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Kira, Kazuaki, 4,623,347, Cl. 623-1.000.

Kanegafuchi Kagaku Kogyo Kubushiki Kaisha: *See*—
Takase, Junji; Yonezawa, Kazuya; and Takamatu, Osamu, 4,623,710, Cl. 528-176.000.

Kaneko, Yukihiro: *See*—
Kurosaki, Masanori; Aoyagi, Yoshio; Ueki, Yoshiharu; Kaneko, Yukihiro; Motohashi, Minoru; Sakaguchi, Shozaburo; and Sawaki, Manabu, 4,623,992, Cl. 369-6.000.

Kaneko, Yutaka; Kadokura, Kenji; and Kinura, Toshihiko, to Konishiroku Photo Industry Co., Ltd. Silver halide color photographic material. 4,623,617, Cl. 430-551.000.

Kaneko, Yutaka; and Funato, Hiroyoshi, to Ricoh Company, Ltd. Optical scanning device. 4,623,791, Cl. 250-234.000.

Kanuma, Tadao, to Asahi Kasei Kogyo Kabushiki Kaisha. Tire-reinforcing dip cord and process for preparation thereof. 4,623,011, Cl. 152-451.000.

Kanzaki Paper Manufacturing Co., Ltd.: *See*—
Suzuki, Kozo; Sakaguchi, Takateru; Tomita, Osamu; and Tanaka, Yoshiaki, 4,623,292, Cl. 414-114.000.
Yamori, Tsunefumi; Okauchi, Shuki; and Fujioka, Hironari, 4,623,557, Cl. 427-44.000.

Kao Corporation: *See*—
Ito, Osamu; Mizutani, Hiroshi; and Nishizawa, Kazunori, 4,623,342, Cl. 604-385.00A.
Kurosaki, Tomihiro; and Masuda, Mitsuharu, 4,623,743, Cl. 558-105.000.

Karamon, Hideaki; and Ogawa, Keiichi, to Karamon, Hideaki; and Research Development Corporation of Japan. Nitrogen-containing amorphous alloy. 4,623,408, Cl. 148-403.000.

Karl Lautenschlager KG Mobelbeschlagfabrik: *See*—
Lautenschlager, Gerhard, 4,622,716, Cl. 16-384.000.

Karpal, David. Refillable container with depressurization means. 4,623,076, Cl. 222-482.000.

Kasahara, Akihiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Magnetic head device. 4,623,947, Cl. 360-109.000.

Kasai, Chihiro: *See*—
Namekawa, Kouroku; Koyano, Akira; and Kasai, Chihiro, 4,622,977, Cl. 128-663.000.

Kaschak, Ronald A.; Magnuson, Roy H.; and Yarmchuk, Edward J., to International Business Machines Corp. Method for controlling plating rate in an electroless plating system. 4,623,554, Cl. 427-8.000.

Kasegrande, Stephen S.: *See*—
Irani, Cyrus A.; Cozewith, Charles; and Kasegrande, Stephen S., 4,623,712, Cl. 528-498.000.

Kashiwamura, Kazuo; Yoshida, Tadahiro; Koda, Toshihide; and Fujiwara, Michio, to Mitsubishi Denki Kabushiki Kaisha. Seal means for a stirling engine or the like. 4,623,151, Cl. 277-24.000.

Kastl, Erna; Klenk, Ludwig; Faust, Horst; and Stenger, Karl, to Hoechst Aktiengesellschaft. Film of fiber-reinforced regenerated cellulose provided with a gas-impermeable layer, for the production of tubular casings. 4,623,566, Cl. 428-36.000.

Katchis, Louis J.; and Bumgarner, Michael P., to Cardiac Monitoring, Inc. User-worn apparatus for monitoring and recording electrocardiographic data and method of operation. 4,622,979, Cl. 128-702.000.

Kato, Hitoshi; Kohri, Toshitaro; and Machida, Junji, to Minolta Camera Kabushiki Kaisha. Dry developer for developing electrostatic latent images contains silica and titanium dioxide. 4,623,605, Cl. 430-110.000.

Kato, Motokazu: *See*—
Matsumoto, Toshio; Kato, Motokazu; Sato, Kiyosumi; Mizushima, Yoshihiro; and Ohnishi, Katsumi, 4,623,962, Cl. 364-200.000.

Kato, Seiichi: *See*—
Imada, Yusuke; Hiroe, Isamu; Higuchi, Tomoyuki; Kato, Seiichi; and Tanino, Masahiro, 4,622,886, Cl. 91-520.000.

Katoh, Hitoshi: *See*—
Kishi, Yasuo; Taniguchi, Hiroyuki; Sakai, Souichi; Katoh, Hitoshi; and Mizukami, Atsuo, 4,623,751, Cl. 136-244.000.

Katt, Judy L.; Moore, Carl O.; and Eastman, James E., to A. E. Staley Manufacturing Company. Dry instant food composition. 4,623,549, Cl. 426-548.000.

Katz, Marcella M. Composite non-distortable needlepoint canvas and method of producing same. 4,623,573, Cl. 428-109.000.

Kauffman, Robert D. Penile support. 4,622,962, Cl. 128-158.000.

Kaul, Bansi L., to Sandoz Ltd. Surface coatings pigmented with a 1-(dichloro-4'-sulfamoyl or substituted sulfamoyl-phenylazo-2-hydroxy-3-phenylcarbamoyl or substituted phenylcarbamoyl-naphthalene. 4,623,397, Cl. 106-308.00Q.

Kautzner, Bruno: *See*—
Laby, Ralph H.; and Kautzner, Bruno, 4,623,330, Cl. 604-63.000.

Kavesh, Sheldon: *See*—
Harpell, Gary A.; Kavesh, Sheldon; Palley, Igor; and Prevorsek, Dusan C., 4,623,574, Cl. 428-113.000.

Kawaguchi, Teruhiko: *See*—
Koide, Teruhiko; Kawaguchi, Teruhiko; Suzuki, Hideyuki; and Muraoka, Tsutomu, 4,623,192, Cl. 297-216.000.

Kawai, Yoshito: *See*—
Aihara, Masaki; Tsuruta, Noboru; Kawai, Yoshito; and Sasaki, Hiroaki, 4,623,777, Cl. 219-121.00L.

Kawamura, Ichiro; Fojioka, Yoshitaka; and Fujita, Makoto, to Matsushita Electric Industrial Co., Ltd. Recording disc reproducing device. 4,623,995, Cl. 369-77.200.

Kawamura, Kunio: *See*—
Taniguchi, Nobuyuki; Ishikawa, Norio; Akada, Yasuaki; Egawa, Takeshi; and Kawamura, Kunio, 4,623,238, Cl. 354-406.000.

Kawamura, Shinji: *See*—
Ito, Masakazu; and Kawamura, Shinji, 4,623,587, Cl. 428-335.000.

Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Uchinishi, Eizaburo, 4,622,928, Cl. 123-65.0PE.

Kawasaki Steel Corporation: *See*—
Aihara, Masaki; Tsuruta, Noboru; Kawai, Yoshito; and Sasaki, Hiroaki, 4,623,777, Cl. 219-121.00L.

Kay, James: *See*—
Flaxington, David; Kay, James; and Miller, Steven M., 4,622,818, Cl. 60-624.000.

Kearns, Nancye D., to Union Carbide Corporation. Oral hygiene compositions. 4,623,537, Cl. 424-49.000.

Keil, Joseph W., to Dow Corning Corporation. Curable organosiloxane compositions containing an emulsified epoxide compound and elastomeric materials prepared therefrom. 4,623,694, Cl. 524-731.000.

Keil, Michael: *See*—
Jahn, Dieter; Becker, Rainer; Goetz, Norbert; Keil, Michael; and Wuerzer, Bruno, 4,623,381, Cl. 71-94.000.

Keller, Reinhold; and Schlingmann, Merten, to Hoechst Aktiengesellschaft. Process for separating ribonucleic acids from a solution containing deoxyribonucleic acids. 4,623,723, Cl. 536-27.000.

Kelsey-Hayes Company: *See*—
Evans, Anthony C., 4,623,045, Cl. 188-79.50P.

Kemmer, Claes, to Aktiebolaget Bygg-och Transportekonomi. Method of detecting the presence of obstacles in the operation of remote-controlled machines. 4,623,032, Cl. 180-169.000.

Kemp, Billy W.; and Brashear, William S., Jr. Method and apparatus of a self-aligning sleeve for the correction of the direction of deviated boreholes. 4,623,026, Cl. 175-76.000.

Kempen, Hermanus J. M.: *See*—
Maaskant, Nico; Bantjes, Adriaan; and Kempen, Hermanus J. M., 4,623,628, Cl. 436-13.000.

Kempf, Paul S. Stereo image display using a concave mirror and two contiguous reflecting mirrors. 4,623,223, Cl. 350-138.000.

Kendall, Debra L.; Butler, James R.; and Menard, Kevin P., to Cosden Technology, Inc. Polymerization inhibitor for vinyl aromatic compounds. 4,623,431, Cl. 203-9.000.

Kendall, George A.: *See*—
Laverick, William J.; and Kendall, George A., 4,622,897, Cl. 101-316.000.

Kenison, David F.; and Sheppard, Donald E., to United Technologies Corporation. Surge/stall cessation detection system. 4,622,808, Cl. 60-39.290.

Kennedy, Thomas P. Pharmacological applications of diphenylhalonium ion. 4,623,666, Cl. 514-754.000.

Kennette, John W.: *See*—
Brooks, Berry A.; Kennette, John W.; and Buyofsky, Conrad C., 4,623,575, Cl. 428-113.000.

Kenrich Petrochemicals, Inc.: *See*—
Sugerman, Gerald; and Monte, Salvatore J., 4,623,738, Cl. 556-17.000.

Kensinger, Lex D.: *See*—
Brown, Christopher K.; Kensinger, Lex D.; Klopp, Gregory S.; Long, Alden O., Jr.; Moyer, Carl L.; Over, William R.; and Walter, Herman D., 4,623,293, Cl. 414-126.000.

Kent, Keith: *See*—
Baier, Robert E.; and Kent, Keith, 4,623,593, Cl. 428-447.000.

Keough, Allen H., to Metallized Products, Inc. Antistatic resin composition. 4,623,594, Cl. 428-500.000.

Kerber, Dathan R.: *See*—
Johnson, Orlin W.; Larson, Michael P.; Benson, Richard E.; Kerber, Dathan R.; and Cross, Jon R., 4,622,805, Cl. 56-14.300.

Kern, Mark T.; and Hodges, Steven E., to Santa Barbara Research Center. Fiber optic system with self test used in fire detection. 4,623,788, Cl. 250-227.000.

Kerschensteiner, Daniel. Solid-phase immunoassay support and method of use thereof. 4,623,629, Cl. 436-518.000.

Kertok, Mark E.: *See*—
Gravley, Mark L.; and Kertok, Mark E., 4,623,521, Cl. 422-156.000.

Kerul, Joseph A.; and Ralstin, Donald E., to Wells Electronic, Inc. Leadless chip carrier socket. 4,623,208, Cl. 339-74.00R.

Kervagoret, Gilbert, to Societe Anonyme D.B.A. Hydraulic assistance device. 4,622,814, Cl. 60-555.000.

Kick, Werner: *See*—
Irrlitz, Hans U.; Kick, Werner; and Sommer, Hans, 4,623,572, Cl. 428-90.000.

Kido, Nobuyuki: *See*—
Oda, Noriyuki; Kido, Nobuyuki; and Muramatsu, Keiji, 4,623,017, Cl. 165-82.000.

Kielb, John A., to Rosemount Inc. Cold junction compensation for thermocouple. 4,623,266, Cl. 374-181.000.

Kiesel, George W.; Rajotte, Paul T.; and Wambolt, LeeAnne, to General Electric Company. Current transformer arrangement for ground fault circuit interrupters. 4,623,865, Cl. 336-65.000.

Kikuchi, Akihiro; and Miyagi, Tosimi, to Murata Manufacturing Co., Ltd. Element installation arrangement for installing an element in a flyback transformer. 4,623,754, Cl. 174-52.00R.

Kikuchi, Kunio: *See*—
Kimijima, Yoshiaki; and Kikuchi, Kunio, 4,623,310, Cl. 431-261.000.

Kikuchi, Nobuo: *See*—
Fujimori, Yoshitsugu; Adachi, Ryouhei; Ebisawa, Hiroo; Kikuchi, Nobuo; and Wada, Tsuneyuki, 4,623,190, Cl. 296-198.000.

Kikuchi, Toru: *See*—
Yamamoto, Ryuzo; Mori, Kihei; Omoto, Yorihiko; Iai, Hidehito; and Kikuchi, Toru, 4,623,571, Cl. 428-68.000.

Kikuzawa, Kenji; and Otaki, Yukio, to Asahi Kasei Kogyo Kabushiki Kaisha. Externally threaded fiber-reinforced plastic member and a method of producing the same. 4,623,290, Cl. 411-350.000.

Kille, Franz: *See*—
Bumuller, Lothar; Engelmann, Alfred; Kille, Franz; Maier, Alfred; Scharf, Otto; and Worner, Fritz, 4,622,728, Cl. 26-18.500.

Killian, Edmund: *See*—
Redl, Stefan; and Killian, Edmund, 4,622,987, Cl. 135-20.00M.

Kim, Syng N., to Wico Corporation. Ball and transducer mounting arrangement for mouse. 4,623,787, Cl. 250-221.000.

Kim, Young B.: *See*—
Efron, Edward; McPherson, James O.; and Kim, Young B., 4,623,837, Cl. 324-77.00R.

Kimberly-Clark Corporation: *See*—
Lloyd, William D.; Win, Maung H.; and Malueg, Dennis E., 4,623,576, Cl. 428-171.000.
Mathews, John H.; Durocher, Donald F.; and Hampl, Vladimir, Jr., 4,622,983, Cl. 131-365.000.
Roeder, Robert J., 4,623,341, Cl. 604-385.00R.

Kimijima, Yoshiaki; and Kikuchi, Kunio, to Mikuni Kogyo Kabushiki Kaisha. Vaporized liquid fuel combustion apparatus. 4,623,310, Cl. 431-261.000.

Kimura, Akinori; and Ohtsuka, Shuichi, to Fuji Photo Film Co., Ltd. Method of drying electrophotosensitive member in electrophotographic recording or copying system of wet type. 4,623,240, Cl. 355-10.000.

Kimura, Akinori: *See*—
Ohtsuka, Shuichi; and Kimura, Akinori, 4,622,915, Cl. 118-652.000.

Kimura, Asa; and Suzuki, Fukuji, to Shiseido Company Ltd. Titaniumica composite material. 4,623,396, Cl. 106-291.000.

Kimura, Hiroshi: *See*—
Irie, Yoichiro; Kimura, Hiroshi; Hisajima, Masahiko; Shibata, Kiyoshi; and Yoshikawa, Yasuhiko, 4,623,137, Cl. 271-160.000.

Kimura, Jiro, to Ricoh Denshi Kogyo Co., Ltd.; Nakanihon System Co., Ltd.; and Barudan Co., Ltd. Programming and display systems for an embroidery machine. 4,622,907, Cl. 112-121.120.

Kimura, Tadashi: *See*—
Nakamura, Toshiyuki; Sugihara, Masahiro; Inaba, Tsutomu; and Kimura, Tadashi, 4,623,306, Cl. 418-55.000.

Kina, Hedeki: *See*—
Iijima, Toshiyuki; Kina, Hedeki; and Nanba, Masaharu, 4,623,243, Cl. 355-15.000.

Kinami, Hitoshi: *See*—
Inoue, Yoshio; Okami, Takehide; Yokoo, Koji; and Kinami, Hitoshi, 4,623,693, Cl. 524-700.000.

Kincaid, William J. Detachable-gaff pole climber. 4,623,037, Cl. 182-221.000.

Kinneir, Ross, to Bensons International Systems, Limited. Portable lecterns. 4,623,276, Cl. 402-80.00R.

Kinura, Toshihiko: *See*—
Kaneko, Yutaka; Kadokura, Kenji; and Kinura, Toshihiko, 4,623,617, Cl. 430-551.000.

Kira, Kazuaki, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Antithrombogenic elastomer products. 4,623,347, Cl. 623-1.000.

Kirkwood, James R.: *See*—
Holay, Sanjay H.; Kirkwood, James R.; and Raniwala, Subodh K., 4,623,546, Cl. 426-448.000.

Kishi, Yasuo; Taniguchi, Hiroyuki; Sakai, Souichi; Katoh, Hitoshi; and Mizukami, Atsuo, to Sanyo Electric Co., Ltd. Photovoltaic device and its manufacturing method. 4,623,751, Cl. 136-244.000.

Kissei Pharmaceutical Co., Ltd.: *See*—
Iizuka, Kinji; Kamijo, Tetsuhide; Yamamoto, Ryoji; and Harada, Hiromu, 4,623,724, Cl. 544-107.000.

Kistner, John F., to Minnesota Mining and Manufacturing Company. Protective coating for phototools. 4,623,676, Cl. 522-15.000.

Kita, Osamu: *See*—
Someya, Kazuo; Kita, Osamu; and Tomomura, Masaomi, 4,623,524, Cl. 423-245.000.

Kita, Yuichi; Sakamoto, Kentaro; Baba, Masao; and Okubo, Atsushi, to Nippon Shokubai Kagaku Kogyo Co., Ltd. Method for production of maleimides. 4,623,734, Cl. 548-545.000.

Kitamura, Shigehiro: *See*—
Koshizuka, Kunihiro; Abe, Takao; Kitamura, Shigehiro; Nakamura, Masaki; Hotta, Yuji; and Ishii, Fumio, 4,623,580, Cl. 428-216.000.

Kitano, Kisei: *See*—
Ogawa, Tetsuya; Goto, Yasuyuki; Kitano, Kisei; and Yoshida, Naoyuki, 4,623,477, Cl. 252-299.500.

Kitano, Toshihiko: *See*—
Watanabe, Takaya; and Kitano, Toshihiko, 4,623,853, Cl. 333-151.000.

Kito, Yoshikazu: *See*—
Tsukiyama, Yasumitsu; Kito, Yoshikazu; Hida, Junichi; and Tatematsu, Susumu, 4,622,826, Cl. 62-137.000.

Kjell, Sven-Inge, to Enco Miljo Forsaljning AB. Method for the production of a hub for a spoke-wheel. 4,622,731, Cl. 29-159.300.

Klaucic, Luciano, to Danieli & C. Officine Meccaniche S.p.A. Device for parking the dummy bar upstream from the extraction and straightening group. 4,623,016, Cl. 164-425.000.

Kleinhagen, Charles W., Jr., to Eaton Corporation. Automatic brake adjustment assembly. 4,623,047, Cl. 188-196.0BA.

Kleinschmit, Peter: *See*—
Deschler, Ulrich; Buder, Wolfgang; Kleinschmit, Peter; and Michel, Rudolf, 4,623,740, Cl. 556-421.000.

Kleinstuck, Roland; and Wiedermann, Rolf, to Bayer Aktiengesellschaft. Isocyanate addition products and a process for their production. 4,623,672, Cl. 521-108.000.

Klenk, Ludwig: *See*—
Kastl, Erna; Klenk, Ludwig; Faust, Horst; and Stenger, Karl, 4,623,566, Cl. 428-36.000.

Klibanov, Alexander M., to Massachusetts Institute of Technology. Removal of combined organic substances from aqueous solutions. 4,623,465, Cl. 210-632.000.

Klingbiel, August G.; and McCartney, Thomas, to Oneac Corporation. Dual programmable response time constants for electronic tap switching line regulators. 4,623,834, Cl. 323-258.000.

Klopp, Gregory S.: *See*—
Brown, Christopher K.; Kensinger, Lex D.; Klopp, Gregory S.; Long, Alden O., Jr.; Moyer, Carl L.; Over, William R.; and Walter, Herman D., 4,623,293, Cl. 414-126.000.

KMK Karl Magerle Lizenz AG: *See*—
Ueberegger, Heinrich, 4,623,117, Cl. 249-122.000.

Knapp, Alfons, to Gevipi A.G. Movable plaque for the flow control device of a single control mixer valve. 4,623,000, Cl. 137-625.170.

Knogo Corporation: *See*—
Buckens, Pierre F., 4,623,877, Cl. 340-572.000.

Knopp, Arthur A.; Lieb, Nathaniel H.; and Alderman, Albert D., Jr., to Penn-Med Technology, Inc. Irradiating device. 4,623,795, Cl. 250-504.00H.

Knudsen, Christopher: *See*—
Michaely, William J.; and Knudsen, Christopher, 4,623,384, Cl. 71-105.000.

Kobayashi, Hiroo, to Mitsubishi Denki Kabushiki Kaisha. Color image display device. 4,623,821, Cl. 313-478.000.

Kobayashi, Hiroshi; Haruyama, Hideaki; and Hirose, Tsuguhiro, to Kabushiki Kaisha Toshiba. Communication network having gain adjustment function of a transmission amplifier of medium attachment unit. 4,623,998, Cl. 370-85.000.

Kobayashi, Kazuhiro: *See*—
Hayashi, Kiyoshi; Hori, Setsuo; Hirata, Nobuyuki; Kobayashi, Kazuhiro; and Mizuno, Masayuki, 4,623,242, Cl. 355-14.00R.

Kobayashi, Masaaki: *See*—
Matsumoto, Tokikazu; Honjo, Masahiro; and Kobayashi, Masaaki, 4,623,940, Cl. 360-10.300.

Kobayashi, Michio: *See*—
Ohta, Ryuji; and Kobayashi, Michio, 4,623,044, Cl. 188-72.100.

Kobayashi, Robert J., to Garrett Corporation, The. Hydraulic assist turbocharger system and method of operation. 4,622,817, Cl. 60-608.000.

Kobayashi, Shigeo: *See*—
Waki, Eiichi; Kobayashi, Shigeo; Hashimoto, Yutaka; and Nakai, Miyoji, 4,623,598, Cl. 429-162.000.

Kobayashi, Yoshikazu: *See*—
Masui, Kodo; Tanaka, Shigetoshi; and Kobayashi, Yoshikazu, 4,623,584, Cl. 428-304.400.

Kobor, Jeno : *See*—
Bernath, Gabor; Kobor, Jeno ; Folop, Ferenc; Sohar, Pal; Perjesi, Pal; Ezer, Elemer; Hajos, Gyorgy; Palosi, Eva; Denes, Laszlo ; and Szporny, Laszlo , 4,623,647, Cl. 514-228.000.

Koboshi, Shigeharu: *See*—
Ishikawa, Masao; Koboshi, Shigeharu; and Kuse, Satoru, 4,623,613, Cl. 430-428.000.

Koda, Toshihide: *See*—
Kashiwamura, Kazuo; Yoshida, Tadahiro; Koda, Toshihide; and Fujiwara, Michio, 4,623,151, Cl. 277-24.000.

Kodaira, Toshimoto: *See*—
Oshima, Hiroyuki; Kodaira, Toshimoto; and Mano, Toshihiko, 4,623,908, Cl. 357-23.700.

Kohli, Dalip K., to American Cyanamid Company. Alkyleneglycolbis(4-methylaminobenzoates). 4,623,746, Cl. 560-50.000.

Kohli, Dalip K.: *See*—
Hirschbuehler, Kevin; and Kohli, Dalip K., 4,623,681, Cl. 523-468.000.

Kohri, Toshitaro: *See*—
Kato, Hitoshi; Kohri, Toshitaro; and Machida, Junji, 4,623,605, Cl. 430-110.000.

Koide, Teruhiko; Kawaguchi, Teruhiko; Suzuki, Hideyuki; and Muraoka, Tsutomu, to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho. Seat. 4,623,192, Cl. 297-216.000.

Kojima, Masuji, to Toray Industries, Inc. Method of imparting crease to polyester fiber goods. 4,623,770, Cl. 219-10.410.

Kolblin, Rolf; and Huber, Manfred, to Wanderer Maschinengesellschaft mbH. Apparatus for the variable machining of workpieces. 4,622,734, Cl. 29-568.000.

Kolmakov, Anatoly D.: *See*—
Maximov, Jury M.; Ziatdinov, Mansur K.; Kolmakov, Anatoly D.; Raskolenko, Larisa G.; Merzhanov, Alexandr G.; Borovinskaya, Inna P.; and Dubovitsky, Fedor I., 4,623,402, Cl. 148-20.300.

Komeno, Taichitro: *See*—
Kono, Masao; Komeno, Taichitro; Ishihara, Shoichi; Yamauchi, Akira; and Okabayashi, Tadashi, 4,623,485, Cl. 540-92.000.

Kondo, Hiroatsu, to Canon Kabushiki Kaisha. Mechanism for mounting ink ribbon cassette. 4,623,272, Cl. 400-208.000.

Kondo, Kaneichi; and Ninomiya, Tooru, to Matsushita Electric Industrial Co., Ltd. Piezoelectric high-voltage generating device. 4,623,814, Cl. 310-339.000.

Kondo, Yukihito, to Jeol Ltd. Method of displaying diffraction pattern by electron microscope. 4,623,783, Cl. 250-310.000.

Konen, Noel R., to NCR Corporation. Automatic communications switch. 4,623,883, Cl. 340-825.010.

Konig, Dieter; Schickhaus, Heinz; and Muller, Johann, to Bayerische Motoren Werke Aktiengesellschaft. Arrangement for fastening a grinding disk on a rotatable grinding plate of a grinding apparatus. 4,622,783, Cl. 51-376.000.

Konishi, Tomeo: *See*—
Ise, Yoji; and Konishi, Tomeo, 4,623,154, Cl. 279-1.00L.

Konishiroku Photo Industry Co., Ltd.: *See*—
Ishikawa, Masao; Koboshi, Shigeharu; and Kuse, Satoru, 4,623,613, Cl. 430-428.000.
Kaneko, Yutaka; Kadokura, Kenji; and Kinura, Toshihiko, 4,623,617, Cl. 430-551.000.
Koshizuka, Kunihiro; Abe, Takao; Kitamura, Shigehiro; Nakamura, Masaki; Hotta, Yuji; and Ishii, Fumio, 4,623,580, Cl. 428-216.000.
Takada, Shun; Kadowaki, Takashi; Sasaki, Masao; Nishijima, Toyoki; and Onodera, Kaoru, 4,623,616, Cl. 430-545.000.
Takagiwa, Hiroyuki; Thuzita, Kenzi; Yamakawa, Goichi; Tomono, Makoto; Wakimoto, Saburo; Miyahara, Sadayasu; Ishida, Tetsumasa; Hyosu, Yoshihiko; and Wada, Tsuneo, 4,623,604, Cl. 430-109.000.
Yamada, Minoru; Ito, Eiji; and Nagai, Masaru, 4,623,233, Cl. 354-229.000.

Konno, Toyohiko: *See*—
Suga, Yozo; Konno, Toyohiko; and Nakayama, Tadashi, 4,623,407, Cl. 148-111.000.

Kono, Masao; Komeno, Taichitro; Ishihara, Shoichi; Yamauchi, Akira; and Okabayashi, Tadashi, to Shionogi & Co., Ltd. 4- or 6-substituted aldosterones. 4,623,485, Cl. 540-92.000.

Konrath, Karl: *See*—
Braun, Wolfgang; and Konrath, Karl, 4,622,943, Cl. 123-502.000.

Kopp, Clinton V.: *See*—
Ford, Douglas L.; Kopp, Clinton V.; and Anderson, Eric W., 4,623,463, Cl. 210-500.290.

Kopp, Richard: *See*—
Hurnik, Helmut; Grogler, Gerhard; Hess, Heinrich; and Kopp, Richard, 4,623,686, Cl. 524-101.000.

Korner, Gerhard; Lutz, Edelwald; and Plettner, Horst, to Raychem Corporation. Hydraulic accumulator for providing pressurized fluid. 4,623,134, Cl. 267-124.000.

Korsunsky, Iosif: *See*—
Grabbe, Dimitry; and Korsunsky, Iosif, 4,623,220, Cl. 350-96.200.

Koshizuka, Kunihiro; Abe, Takao; Kitamura, Shigehiro; Nakamura, Masaki; Hotta, Yuji; and Ishii, Fumio, to Konishiroku Photo Industry Co., Ltd. Thermal transfer recording medium. 4,623,580, Cl. 428-216.000.

Kostinko, John A., to J. M. Huber Corporation. Filtration of zeolites. 4,623,631, Cl. 502-60.000.

Kosuge, Yutaka: *See*—
Irimajiri, Shoichiro; Kosuge, Yutaka; and Nakamura, Shigehira, 4,623,870, Cl. 340-52.00F.

Kosugiyama, Otoya: *See*—
Asano, Junichi; Ishii, Hiroyuki; and Kosugiyama, Otoya, 4,623,938, Cl. 358-285.000.

Kosulic, Kenneth F.: *See*—
Crandall, Robert E.; Kosulic, Kenneth F.; Rooney, Thomas C.; and Smith, Larry C., 4,622,894, Cl. 100-118.000.

Kotaka, Hirofumi: *See*—
Ishizawa, Tadao; Kotaka, Hirofumi; and Kakinuma, Masami, 4,622,823, Cl. 62-6.000.

Kovalev, Alexei D.: *See*—
Ivanov, Mikhail G.; Golov, Veniamin G.; Kuzmin, Vladimir N.; Alyakrinskaya, Aida I.; Mushy, Roman Y.; Kovalev, Alexei D.; Shutova, Nadezhda V.; Rodionov, Jury A.; Molev, Igor I.; Yakovleva, Ljudmila S.; Berezin, Vitaly B.; Petrashko, Alexei I.; Shuev, Gennady M.; Bukin, Boris A.; Belkina, Tamara M., deceased; and Belkin, Naum S., administrator, 4,623,731, Cl. 548-374.000.

Kowalski, Richard M.: *See*—
Baker, Keith F.; Kowalski, Richard M.; and Miahler, Ralph E., 4,623,860, Cl. 335-170.000.

Koyano, Akira: *See*—
Namekawa, Kouroku; Koyano, Akira; and Kasai, Chihiro, 4,622,977, Cl. 128-663.000.

Kraemer, Heinz: *See*—
Denz, Helmut; Etzold, Peter; Groschel, Wolfgang; Kaiser, Gunther; Kraemer, Heinz; Nitschke, Werner; and Zechnall, Martin, 4,623,974, Cl. 364-551.000.

Kraft, Inc.: *See*—
Glenn, Edward P.; and Gething, Frank, 4,622,775, Cl. 47-63.000.

Kramer & Grebe GmbH & Co. KG: *See*—
Grebe, Reiner; Norbisrath, Max; and Schmidt, Karl-Heinz, 4,623,096, Cl. 241-30.000.

Krasij, Bohdan; and Mune, Charles, to Carlingswitch, Inc. Rocker actuator bracket assembly for a split case circuit breaker. 4,623,861, Cl. 335-202.000.

Krasna, Beth: *See*—
Gaisch, Helmut; Krasna, Beth; and Schulthess, Dieter, 4,622,982, Cl. 131-297.000.

Kratz, Walter. Tanning apparatus with means which aid facial tanning. 4,623,796, Cl. 250-504.00R.

Kraus, Gerold; Huber, Walter; Hack, Joachim; Schulze-Berge, Klaus; and Sold, Roland, to BASF Aktiengesellschaft. Method and arrangement for detecting error signals in a disk-drive, and a magnetic test disk therefor. 4,623,942, Cl. 360-75.000.

Krause, W. Barry, to Oslo Controls, Inc. Rotary multi-contact switch. 4,623,763, Cl. 200-11.00K.

Krauss, Mark J., to American Cord & Webbing Co., Inc. Cord lock. 4,622,723, Cl. 24-115.00G.

Kress, Kenneth, to Primages Inc. Ink ribbon cartridge for a printer including means for transversely displacing and advancing the ink ribbon in the cartridge. 4,623,271, Cl. 400-208.000.

Krieg, Rudolf; Ziegler, Friedrich; and Bierbauer, Franz-Josef, to Patent-Treuhand-Gesellschaft fur elektrische Gluhlampen mbH. Halogen incandescent-type reflector lamp, particularly for display illumination. 4,623,815, Cl. 313-113.000.

Kristiansen, Odd; Drabek, Jozef; and Fluck, Victor, to Ciba-Geigy Corporation. Novel n-phosphoryl- or n-thiophosphoryl-n's-triazinylformamidines. 4,623,642, Cl. 514-84.000.

Krone, Bernard; and Ahler, Wilhelm, to Maschinenfabriken Bernard Krone GmbH. Machine which is pulled or provided with a three-point attachment to a tractor and used for the harvesting of corn and similar stalk-like crop. 4,622,804, Cl. 56-13.900.

Kroner, Michael: *See*—
Brunnmueller, Fritz; Kroner, Michael; Hartmann, Heinrich; Linhart, Friedrich; and Pfitzner, Klaus, 4,623,699, Cl. 525-355.000.

Kroon, John C.: *See*—
Glesius, Frederick L.; Kroon, John C.; Schneider, Donald A.; and Myrabo, Arne L., 4,623,508, Cl. 376-254.000.

Kruse, Hansjorg: *See*—
Geiger, Rolf; Gerhards, Hermann; and Kruse, Hansjorg, 4,623,715, Cl. 530-330.000.

Kubota, Kazufumi; and Tokuda, Kanji, to Fuji Photo Film Co., Ltd. Photographic printing apparatus. 4,623,246, Cl. 355-38.000.

Kubozuka, Takao, to Nissan Motor Co., Ltd. Cooling system for automotive engine or the like. 4,622,925, Cl. 123-41.250.

Kucharska, Helena Z.; and Burton, Thomas M., to Fiberglas Canada Inc. Blowing agents and their use in preparations of polyester foams. 4,623,479, Cl. 252-350.000.

Kugland, Peter: *See*—
Distel, Robert; Groner, Hans; and Kugland, Peter, 4,622,811, Cl. 60-303.000.

Kuipers, Warren W.: *See*—
Hays, Herbert G.; and Kuipers, Warren W., 4,622,947, Cl. 126-110.00R.

Kumagai, Akira: *See*—
Mitsuoka, Katsuya; Narishige, Shinji; Kumagai, Akira; Sano, Masaki; Hara, Shinichi; and Hanazono, Masanobu, 4,623,439, Cl. 204-192.200.

Kumar, Viraraghavan S., to Deere & Company. Proportional control valve. 4,623,118, Cl. 251-30.010.

Kunig, Horst E., to Kunig, Horst E.; and Robinson, John N. Method and apparatus for determining of stress condition of a subject. 4,622,980, Cl. 128-704.000.

Kuo, Charles C. Y.; and Bloom, Terry R., to CTS Corporation. Copper conductive paint for porcelainized metal substrates. 4,623,482, Cl. 252-512.000.

Kupies, Dieter: *See*—
Bexten, Ludger; Cornils, Boy; and Kupies, Dieter, 4,623,490, Cl. 260-505.00P.

Kurahashi, Yoshio; Shiokawa, Kozo; Goto, Toshio; Kagabu, Shinzo; Kamochi, Atsumi; Moriya, Koichi; and Hayakawa, Hidenori, to Nihon Tokushu Noyaku Seizo K.K. 1,2,3,4-tetrahydroquinolin-1-ylcarbonylimidazoles and herbicidal use thereof. 4,623,377, Cl. 71-92.000.

Kuraishi, Yoshiaki, to NEC Corporation. Switched capacitor filter. 4,623,854, Cl. 333-173.000.

Kuribayashi, Michio, to Fuji Photo Film Co., Ltd. Discrimination circuit for a line sequential signal. 4,623,914, Cl. 358-14.000.

Kurihara, Kazumasa: *See*—
Arai, Kenji; and Kurihara, Kazumasa, 4,623,798, Cl. 307-117.000.

Kurihara, Nobuo: *See*—
Miyagaki, Hisanori; Higashi, Toshihiko; Yokogawa, Atsushi; Shimada, Yoshihiro; Kurihara, Nobuo; Nishikawa, Mitsuyo; Sato, Yoshio; Watanabe, Atsumi; and Morooka, Yasuo, 4,622,922, Cl. 122-449.000.

Kurita, Kaoru: *See*—
Motoyama, Shimesu; Kurita, Kaoru; Sakashita, Shizuka; Takei, Narimichi; and Ohno, Shigeru, 4,623,098, Cl. 241-46.040.

Kurokawa, Kenji: *See*—
Ikeda, Masato; and Kurokawa, Kenji, 4,623,789, Cl. 250-227.000.

Kurosaki, Masanori; Aoyagi, Yoshio; Ueki, Yoshiharu; Kaneko, Yukihiro; Motohashi, Minoru; Sakaguchi, Shozaburo; and Sawaki, Manabu, to Pioneer Electronic Corporation. Operating panel for electronic audio equipment. 4,623,992, Cl. 369-6.000.

Kurosaki, Tomihiro; and Masuda, Mitsuharu, to Kao Corporation. Phosphoric esters and method for preparing the same. 4,623,743, Cl. 558-105.000.

Kurosawa, Mitsuteru, to Max Co. Ltd. Electronic stapler. 4,623,082, Cl. 227-7.000.

Kusakabe, Hitoshi; and Midorikawa, Yuichiro, to Yamasa Shoyu Kabushiki Kaisha. L-glutamic acid oxidase and its production. 4,623,626, Cl. 435-191.000.

Kuse, Satoru: *See*—
Ishikawa, Masao; Koboshi, Shigeharu; and Kuse, Satoru, 4,623,613, Cl. 430-428.000.

Kuseski, Roger E.: *See*—
Andrews, Donald R.; Kuseski, Roger E.; and Travis, Terence, 4,623,244, Cl. 355-24.000.

Kushida, Takeo: *See*—
Nozaki, Shinya; Yamada, Keiichi; and Kushida, Takeo, 4,622,942, Cl. 123-446.000.
Kuss, John M.: *See*—
Nystuen, Arne M.; and Kuss, John M., 4,623,811, Cl. 310-192.000.
Kussel, Willy; and Demircan, Bayramali, to Gewerkschaft Eisenhutte Westfalia. Hydraulic control device. 4,622,998, Cl. 137-596.150.
Kuzmin, Vladimir N.: *See*—
Ivanov, Mikhail G.; Golov, Veniamin G.; Kuzmin, Vladimir N.; Alyakrinskaya, Aida I.; Mushy, Roman Y.; Kovalev, Alexei D.; Shutova, Nadezhda V.; Rodionov, Jury A.; Molev, Igor I.; Yakovleva, Ljudmila S.; Berezin, Vitaly B.; Petrashko, Alexei I.; Shuev, Gennady M.; Bukin, Boris A.; Belkina, Tamara M., deceased; and Belkin, Naum S., administrator, 4,623,731, Cl. 548-374.000.
Kuzumoto, Hideshi; Ukai, Tetsuo; and Uejima, Akira, to Toyo Boseki Kabushiki Kaisha. Fluid separation element. 4,623,460, Cl 210-321.100.
Kyoden, Hiroshi: *See*—
Toda, Masumi; Mori, Masashi; Nonaka, Shingo; Kyoden, Hiroshi; Ichikawa, Kenji; and Hamazaki, Yoshihisa, 4,623,393, Cl. 106-38.220.
Kyowa Hakko Kogyo Co., Ltd.: *See*—
Nakanishi, Toshihide; Azuma, Tomoki; Hirao, Toshihiko; Hattori, Kiyoji; and Sakurai, Minoru, 4,623,623, Cl. 435-115.000.
Takasawa, Seigo; Shirahata, Kunikatsu; Sato, Seiji; and Takahashi, Keiichi, 4,623,722, Cl. 536-16.100.
L.P. Italiana S.p.A.: *See*—
Paoletti, Sergio; and Leopardi, Francesco, 4,622,847, Cl. 73-61.400.
La Trobe University: *See*—
Scopes, Robert K., 4,623,625, Cl. 435-190.000.
Labofina, S.A.: *See*—
Lepain, Andre; and Bronchart, Robert D. E. M., 4,623,468, Cl. 210-749.000.
Laby, Ralph H.; and Kautzner, Bruno. Gas diffusion-limited controlled release devices. 4,623,330, Cl. 604-63.000.
Laby, Ralph H. Capsule for administration to ruminants. 4,623,345, Cl. 604-892.000.
Lacer, S.A.: *See*—
Marquez Perez, Miquel; Matas Docampo, Ricardo; Puigmarti Codina, Jose M.; Repolles-Moliner, Jose ; and Serra Sola, Jorge, 4,623,648, Cl. 514-291.000.
Lagoutte, Andre: *See*—
Gautier, Daniel M.; and Lagoutte, Andre, 4,623,494, Cl. 261-161.000.
Lam Shang Leen, Kee K., to Centre de Recherche Industrielle du Quebec. Process for the preparation of a crystalline titanoborosilicate. 4,623,526, Cl. 423-277.000.
LaMacchia, Michael P., to Motorola, Inc. Constant duty cycle, frequency programmable clock generator. 4,623,846, Cl. 328-61.000.
Lambert, Susan L.; Johnson, Russell W.; Lawson, Randy J.; and Barr, Tery L., to Uop Inc. Catalytic composite for conversion of hydrocarbons and the method of preparation and use thereof. 4,623,632, Cl. 502-74.000.
Lamberti, Vincent; and Gutierrez, Eddie N., to Lever Brothers Company. Method for improving water solubility of surfactants using Nopol derived sulfonates. 4,623,483, Cl. 252-545.000.
Lampley, Sidney J.: *See*—
Trull, Jeffrey G.; and Lampley, Sidney J., 4,623,174, Cl. 292-1.000.
Lancesseur, Bernard. Absorbing and especially dehydrating capsule. 4,623,368, Cl. 55-387.000.
Lane, Kimberley J.: *See*—
Hendrix, James E.; Lane, Kimberley J.; and Daniels, John Y., 4,623,356, Cl. 8-107.000.
Langdon, Albert K.: *See*—
Jones, David W.; Langdon, Albert K.; Pruehs, Allen V.; and Robinson, Darrell A., 4,622,753, Cl. 33-189.000.
Lange, Kevin M., to General Motors Corp. Articulated resistance welding electrode with universal movement. 4,623,775, Cl. 219-120.000.
Langenberg, Josef, to Magnettechnik NSM GmbH, Firma. Apparatus for feeding singled disc-shaped elements. 4,623,057, Cl. 198-381.000.
Lapeyre, Didier; and Chareire, Jean-Louis. Total heart prothesis comprising two uncoupled pumps associated in a functionally undissociable unit. 4,623,350, Cl. 623-3.000.
Lardellier, Alain M. J.: *See*—
Hallinger, Claude C.; and Lardellier, Alain M. J., 4,623,298, Cl. 415-139.000.
Larouche, Rejean: *See*—
Dubreuil, Luc T.; Pouliot, Gaston D.; Cote, Gerard G.; Larouche, Rejean; and Zuber, Bretislav P., 4,622,741, Cl. 29-858.000.
Larson, Denis L.: *See*—
Gombrich, Peter P.; Uttermark, John A.; Schmid, Sidney L.; and Larson, Denis L., 4,623,418, Cl. 156-361.000.
Larson, Michael P.: *See*—
Johnson, Orlin W.; Larson, Michael P.; Benson, Richard E.; Kerber, Dathan R.; and Cross, Jon R., 4,622,805, Cl. 56-14.300.
Larson, Robert. Line clamp for an ostomy bag. 4,623,338, Cl. 604-339.000.
Larue, Joseph; and Rojey, Alexandre, to Institut Francais du Petrole. Absorption method for the generation of cold and/or heat using a mixture of several constituents as working fluid. 4,622,825, Cl. 62-102.000.
Laurent, Sebastian M.: *See*—
Sanders, Robert N.; and Laurent, Sebastian M., 4,623,529, Cl. 423-328.000.
Laurette, Michel; and Lenoir, Marc P. Optical fibre cable and method of and apparatus for determining location of a break therein. 4,623,218, Cl. 350-96.230.
Lautenschlager, Gerhard, to Karl Lautenschlager KG Mobelbeschlagfabrik. Door-related hinge part for a cabinet hinge. 4,622,716, Cl. 16-384.000.
Lavely, Daniel, to Rockwell International Corporation. Actuator rod for push-pull mechanisms. 4,622,862, Cl. 74-588.000.
Laverick, William J., to Wizer Equipment, Inc. Powder spray gun. 4,622,896, Cl. 101-416.00R.
Laverick, William J.; and Kendall, George A., to Wizer Equipment, Inc. Sheet numbering machine. 4,622,897, Cl. 101-316.000.
Lawson, Randy J.: *See*—
Lambert, Susan L.; Johnson, Russell W.; Lawson, Randy J.; and Barr, Tery L., 4,623,632, Cl. 502-74.000.
Lazerson, Max M.: *See*—
Bohme, Rolf C.; and Lazerson, Max M., 4,623,792, Cl. 250-255.000.
Le Groupe Videotron LTEE: *See*—
Dufresne, Michel; Champagne, Jean-Paul; Dufresne, Daniel; Scott, Pierre; and Courtney, John, 4,623,920, Cl. 358-122.000.
Lech, Richard J., to J. I. Case Company. Header flotation. 4,622,803, Cl. 56-10.200.
Le Creurer, Maurice; and Behar, Joseph, to Automobiles Peugeot; and Automobiles Citroen. Cylinder-head unit for an internal combustion engine having three valves. 4,622,941, Cl. 123-432.000.
Lee, Charles A.: *See*—
Dalman, G. Conrad; and Lee, Charles A., 4,623,849, Cl. 330-287.000.
Lee, Kenneth W. Sucker rod ratchet wrench. 4,622,869, Cl. 81-52.000.
Lee, Kien-Yin, to United States of America, Energy. Preparation of 1,1'-dinitro-3,3'-azo-1,2,4-triazole. 4,623,409, Cl. 149-92.000.
Lee, Kuan M.; Chu, Ruey S.; Wong, Nam S.; Clark, James U.; and Tang, Raymond, to Hughes Aircraft Company. Interleaved waveguide and dipole dual band array antenna. 4,623,894, Cl. 343-700.0MS.
Lee, Sang D. Disposable safety straight razor. 4,622,742, Cl. 30-55.000.
Lee, Sang S. Method of producing analgesia. 4,623,665, Cl. 514-678.000.
Lefevre, Norman A.: *See*—
Moore, Eugene R.; and Lefevre, Norman A., 4,623,678, Cl. 523-335.000.
Le Foll, Jean: *See*—
Benaroya, Henry; Le Foll, Jean; and Cadoux, Jean-Elie, 4,623,459, Cl. 210-242.300.
Lehtinen, Jukka; and Sorma, Olli-Pekka, to Oy Tampella Ab. Method of and a device for drying a paper web or the like. 4,622,758, Cl. 34-13.000.
Leidig, Karl: *See*—
Breitenfellner, Franz; Leidig, Karl; and Kainmuller, Thomas, 4,623,562, Cl. 427-296.000.
Leighton, Francis; and Trebes, Fred W., to Air Dry Corporation of America. Safe high pressure instrument valve. 4,623,120, Cl. 251-223.000.
Leland Stanford Junior University, The Board of Trustees of the: *See*—
Strong, Alexander R., 4,622,877, Cl. 84-1.010.
Leng, Douglas E.: *See*—
Timm, Edward E.; and Leng, Douglas E., 4,623,706, Cl. 526-88.000.
Lenoir, Marc P.: *See*—
Laurette, Michel; and Lenoir, Marc P., 4,623,218, Cl. 350-96.230.
Leonard, John F.: *See*—
Fritts, David H.; and Leonard, John F., 4,623,600, Cl. 429-223.000.
Leonard, Willie B. Hydraulically actuated spool valve. 4,623,003, Cl. 137-625.660.
Leonardi, Alfio: *See*—
Baratto, Mirko; and Leonardi, Alfio, 4,622,765, Cl. 36-120.000.
Leopardi, Francesco: *See*—
Paoletti, Sergio; and Leopardi, Francesco, 4,622,847, Cl. 73-61.400.
Lepain, Andre; and Bronchart, Robert D. E. M., to Labofina, S.A. Method for treating oil slicks. 4,623,468, Cl. 210-749.000.
Lepert, Andre : *See*—
Jacob, Lutz E.; Lepert, Andre ; and Evans, Morris L., 4,623,698, Cl. 525-221.000.
Lerch, Hansulrich: *See*—
Hangarter, Otto; Lerch, Hansulrich; and Stillhard, Otmar, 4,622,910, Cl. 112-447.000.
Les Cables de Lyon: *See*—
Degoix, Bernard; and Boussemaer, Daniel, 4,623,495, Cl. 264-1.500.
Les Produits Organiques du Santerre-Orsan S.A. ("Orsan"): *See*—
Costanza: John R.; and Terwedow, Henry A., 4,623,540, Cl. 424-81.000.
Leslie Hartridge Ltd: *See*—
Merrell, Ronald W., 4,623,278, Cl. 403-362.000.
Leugers, Mary A., to Union Camp Corporation. Laser induced acoustic generation for sonic modulus. 4,622,853, Cl. 73-597.000.
Leuner, Hilmar: *See*—
Olschewski, Armin; Bauer, Bernhard; Leuner, Hilmar; and Dobhan, Herbert, 4,623,270, Cl. 384-576.000.
Leupold, Hermann: *See*—
Bruckner, Raimund; Eschner, Axel; and Leupold, Hermann, 4,623,130, Cl. 266-271.000.
Lever Brothers Company: *See*—
Lamberti, Vincent; and Gutierrez, Eddie N., 4,623,483, Cl. 252-545.000.
Urban, Warren J., 4,623,357, Cl. 8-107.000.
Levine, Aaron W., to RCA Corporation. Detector assembly for a television camera. 4,623,916, Cl. 358-50.000.

Lewis, Earl R. Portable hydraulic power unit. 4,623,124, Cl. 254-350.000.

Lewis, Jean D.; Goldschmidt, Willfred; Coiro, Donald; and Engler, Phillip V., to Scop-X Research and Development Limited Partnership. Single use film developing assembly. 4,623,235, Cl. 354-312.000.

Lewis, Steven C.; Love, Robert B.; Miller, Stephen C.; Shing, Yuh-han; Sibert, John W.; Tanner, David P.; and Tran, Nang T., to Atlantic Richfield Company. Photoconductive device containing zinc oxide transparent conductive layer. 4,623,601, Cl. 430-69.000.

Lewis, William N. Hydrogen engine. 4,622,924, Cl. 123-3.000.

Ley, Gregor: *See*—
Gimpel, Juergen; Gulbins, Erich; and Ley, Gregor, 4,623,679, Cl. 523-410.000.

Leyden, Roger J., to Se-Kure Controls, Inc. Computer power switch lockout apparatus. 4,623,765, Cl. 200-43.220.

L'hermite, Pierre, to U.S. Philips Corporation. Photomultiplier tube which is insensitive to high magnetic fields. 4,623,785, Cl. 250-207.000.

Lichtenstein, Terri: *See*—
Haddock, Richard; and Lichtenstein, Terri, 4,623,784, Cl. 250-201.000.

Lieb, Nathaniel H.: *See*—
Knopp, Arthur A.; Lieb, Nathaniel H.; and Alderman, Albert D., Jr., 4,623,795, Cl. 250-504.00H.

Lieker, Reiner, to P.A. Rentrop Hubert & Wagner Fahrzeugausstattungen GmbH & Co KG. Seat with lumbar support. 4,623,193, Cl. 297-284.000.

Life Light Systems: *See*—
Scolari, John E.; Warner, Robert T.; and Deavenport, Joe E., 4,623,824, Cl. 315-241.00R.

Lin, Kun-Shan; Henderson, Alva E.; and Frantz, Gene A., to Texas Instruments Incorporated. Method and apparatus for converting voice characteristics of synthesized speech. 4,624,012, Cl. 381-51.000.

Lin, Shiow C., to W. R. Grace & Co. Reactive plastisol dispersion. 4,623,558, Cl. 427-44.000.

Lindholm, Lars Åke A.: *See*—
Bladh, Eric A.; and Lindholm, Lars Åke A., 4,623,885, Cl. 340-825.005.

Lindmayer, Istvan; and Menassa, Karim, to Patents Unlimited Ltd. Needleless jet injector. 4,623,332, Cl. 604-68.000.

Lindquist, Carl E., to M.A.C. Textile Machine Co., Inc. Fabric fusing machine. 4,623,422, Cl. 156-583.500.

Lindsay, Robert L.: *See*—
Zaruba, John V.; Meyer, Burton C.; Lindsay, Robert L.; and Oppenheim, Michael J., 4,623,319, Cl. 446-373.000.

Linear Technology Corporation: *See*—
Rempfer, William C.; and Redfern, Thomas P., 4,624,006, Cl. 377-69.000.

Linhart, Friedrich: *See*—
Brunnmueller, Fritz; Kroner, Michael; Hartmann, Heinrich; Linhart, Friedrich; and Pfitzner, Klaus, 4,623,699, Cl. 525-355.000.

Linman, Dale L.: *See*—
Long, Dabbs C.; Anderson, Gerald R.; Linman, Dale L.; and Moore, Thomas M., 4,622,836, Cl. 72-31.000.

Linton, Robert W.; and Orlowski, Alex W., to Pittsburgh Corning Corporation. Cellular ceramic insulating body and method for making same. 4,623,585, Cl. 428-312.800.

Lips, Hendrick: *See*—
Witt, Wolfram; Lips, Hendrick; Scholler, Herbert; and Schweiger, Raimund, 4,622,900, Cl. 102-387.000.

Lischke, Burkhard: *See*—
Frosien, Jurgen; and Lischke, Burkhard, 4,623,836, Cl. 324-73.0PC.

Liu, Yin-Chang: *See*—
Adler, Robert J.; Brown, William R.; Auyang, Lun; Liu, Yin-Chang; and Cook, W. Jeffrey, 4,623,372, Cl. 62-532.000.

Livingston, William D., to E-Systems, Inc. Prioritized data packet communication. 4,623,886, Cl. 340-825.500.

Lloyd, William D.; Win, Maung H.; and Malueg, Dennis E., to Kimberly-Clark Corporation. Lightweight nonwoven tissue and method of manufacture. 4,623,576, Cl. 428-171.000.

Lochmoeller, Stephen A., to Roton Products, Inc. Load bearing, one-way, spring clutch assembly. 4,623,051, Cl. 192-8.00C.

Lock, Michael W.: *See*—
Petre, Mark L.; and Lock, Michael W., 4,623,764, Cl. 200-38.00R.

Locke, Stanley; Sinha, Bikash K.; and Ekstrom, Michael P., to Schlumberger Technology Corporation. Rounded wall surface acoustic wave sensors. 4,622,854, Cl. 73-703.000.

Locke, Stanley: *See*—
Sinha, Bikash K.; and Locke, Stanley, 4,622,855, Cl. 73-703.000.

Loesch, Robert P., to AT&T Technologies, Inc. Apparatus for making retractile cords. 4,623,129, Cl. 266-104.000.

Lohmann GmbH & Co KG: *See*—
Barth, Peter, 4,622,761, Cl. 34-86.000.

Lombardino, Joseph G., to Pfizer Inc. [4-substituted benzoyloxy]-N-substituted-2H-1,2-benzothiazine-3-carboxamide 1,1-dioxides having anti-arthritic activity. 4,623,486, Cl. 514-212.000.

Long, Alden O., Jr.: *See*—
Brown, Christopher K.; Kensinger, Lex D.; Klopp, Gregory S.; Long, Alden O., Jr.; Moyer, Carl L.; Over, William R.; and Walter, Herman D., 4,623,293, Cl. 414-126.000.

Long, Dabbs C.; Anderson, Gerald R.; Linman, Dale L.; and Moore, Thomas M., to MacGregor Golf Company. Loft and lie calibration machine. 4,622,836, Cl. 72-31.000.

Long, Stuart G.; and Maciocia, Michael J., to General Dynamics, Pomona Division. Method of coating packaging material with antistatic composition. 4,623,564, Cl. 427-393.000.

Loose, Gunter: *See*—
Abthoff, Jorg; Schuster, Hans-Dieter; Wollenhaupt, Gottfried; Loose, Gunter; and Busch, Michael-Rainer, 4,622,809, Cl. 60-274.000.

Loram Maintenance of Way, Inc.: *See*—
Vieau, Robert G.; Anderson, Truman A.; and Johansen, Kevin C., 4,622,781, Cl. 51-178.000.

Lord, Gerald. Osteal prosthesis and the production thereof. 4,623,349, Cl. 623-18.000.

Lorenz, Achim R., to MacMillan Bloedel Limited. Corrugated container with foldable flaps. 4,623,072, Cl. 220-443.000.

Lorik, Erno : *See*—
Grega nee Toth, Erzsebet; Nagy, Jozsef; Tarpai, Gyula; Lorik, Erno ; Toth, Istvan; Pasztor, Karoly; Bartfai nee Harsanyi, Zsuzsanna; Beres, Ilona; Tasi, Laszlo ; Urszin nee Simon, Eszter; Dombay, Zsolt; Bajusz nee Olah, Judit; and Balogh, Karoly, 4,623,383, Cl. 71-100.000.

Loring, Joshua: *See*—
Pejouhy, Radi; Benner, Stephen J.; and Loring, Joshua, 4,622,739, Cl. 29-622.000.

Loscutoff, Steve: *See*—
Bambauer, Boyd R.; Dunkle, Donald H.; and Loscutoff, Steve, 4,623,029, Cl. 177-137.000.

Loth, Eric: *See*—
Gogniat, Paul; and Loth, Eric, 4,623,262, Cl. 368-294.000.

Love, Robert B.: *See*—
Lewis, Steven C.; Love, Robert B.; Miller, Stephen C.; Shing, Yuh-han; Sibert, John W.; Tanner, David P.; and Tran, Nang T., 4,623,601, Cl. 430-69.000.

Lubin, Bertram: *See*—
Roos, Dirk; Voetman, Alwin A.; Meerhof, Louis J.; and Lubin, Bertram, 4,623,620, Cl. 435-7.000.

Lubrizol Corporation, The: *See*—
Davis, Kirk E.; and DiBiase, Stephen A., 4,623,473, Cl. 252-33.600.
Dorer, Casper J., Jr.; and Hayashi, Katsumi, 4,623,684, Cl. 524-96.000.

Luccarelli, Domenick, Jr.: *See*—
Pittet, Alan O.; Muralidhara, Ranya; Miller, Kevin P.; and Luccarelli, Domenick, Jr., 4,623,538, Cl. 424-52.000.
Pittet, Alan O.; Muralidhara, Ranya; Miller, Kevin P.; Luccarelli, Domenick, Jr.; and Vock, Manfred H., 4,623,547, Cl. 426-535.000.

Luceri, Thomas J., to Personal Products Company. Absorbent product with color contrasted cover pattern. 4,623,340, Cl. 604-385.00R.

Lundblad, John L.: *See*—
Fernandes, Peter M.; and Lundblad, John L., 4,623,717, Cl. 530-380.000.

Lundquist, Jerry R.; and Bertram, H. Neal, to Ampex Corporation. Permanent magnet biased narrow track magnetoresistive transducer. 4,623,867, Cl. 338-32.00R.

Lutz, Edelwald: *See*—
Korner, Gerhard; Lutz, Edelwald; and Plettner, Horst, 4,623,134, Cl. 267-124.000.

M.A.C. Textile Machine Co., Inc.: *See*—
Lindquist, Carl E., 4,623,422, Cl. 156-583.500.

Maaskant, Nico; Bantjes, Adriaan; and Kempen, Hermanus J. M., to Organon Teknika b.v. Binder for low density lipoproteins. 4,623,628, Cl. 436-13.000.

Mabrey, David W.; and Dye, James M., to P. D. George Company, The. Dicyclopentadiene-tris(2-hydroxyethyl)isocyanurate-modified polyesters. 4,623,696, Cl. 525-33.000.

MacDougall, John; and Pargeter, John K., to International Metals Reclamation Co., Inc. Furnacing. 4,622,905, Cl. 110-347.000.

MacGregor Golf Company: *See*—
Long, Dabbs C.; Anderson, Gerald R.; Linman, Dale L.; and Moore, Thomas M., 4,622,836, Cl. 72-31.000.

Machida, Junji: *See*—
Kato, Hitoshi; Kohri, Toshitaro; and Machida, Junji, 4,623,605, Cl. 430-110.000.

Machida, Toyotaka; and Enami, Ken, to Victor Company of Japan, Ltd. Rotation control apparatus for a motor. 4,623,939, Cl. 358-342.000.

Maciocia, Michael J.: *See*—
Long, Stuart G.; and Maciocia, Michael J., 4,623,564, Cl. 427-393.000.

MacKechnie, Bruce. Hand held, multi-directional device for aquatic exercising. 4,623,142, Cl. 272-116.000.

Mackiewicz, Ralph E., to Westinghouse Electric Corp. Programmable controller having automatic contact line solving. 4,623,961, Cl. 364-147.000.

MacLean-Fogg Company: *See*—
Hellon, Keith, 4,623,308, Cl. 425-117.000.

MacMillan Bloedel Limited: *See*—
Lorenz, Achim R., 4,623,072, Cl. 220-443.000.

Macovski, Albert. NMR imaging system using excited reference coils. 4,623,843, Cl. 324-309.000.

Macovski, Albert. NMR inhomogeneity compensation system. 4,623,844, Cl. 324-320.000.

Madden, Thomas J., to United Technologies Corporation. Combustion liner for a gas turbine engine. 4,622,821, Cl. 60-757.000.

Madgavkar, Ajay: *See*—
Che, Stanley C.; and Madgavkar, Ajay, 4,623,444, Cl. 208-92.000.

Madonia, Ralph J.: *See*—
Questel, John M.; and Madonia, Ralph J., 4,623,413, Cl. 156-247.000.

Maekawa, Yukio: *See*—
Yoneyama, Masakazu; Maekawa, Yukio; Yokoyama, Shigeki; and Yamanouchi, Junichi, 4,623,614, Cl. 430-523.000.
Maeke, Siegfried; Bauer, Adolf; Vogt, Hubert; and Wolf, Helmut, to Diamalt Aktiengesellschaft. Processes for preparing 4-amino-3-imidazolin-2-one and (2-methoxy-2-iminoethyl)urea. 4,623,730, Cl. 548-308.000.
Magic Seal Corporation: *See*—
Nevins, Norman; and Gustafson, Thomas L., 4,623,677, Cl. 523-122.000.
Magnetic Peripherals Inc.: *See*—
Pexton, Harold W., 4,623,952, Cl. 361-220.000.
Magnettechnik NSM GmbH, Firma: *See*—
Langenberg, Josef, 4,623,057, Cl. 198-381.000.
Magnuson, Roy H.: *See*—
Kaschak, Ronald A.; Magnuson, Roy H.; and Yarmchuk, Edward J., 4,623,554, Cl. 427-8.000.
Magoni, Pascal; Bernard, Jean-Pierre; and De Guglielmo, Pascal, to Brasseries Kronenbourg (S.A.). High-speed automatic hooping device. 4,622,893, Cl. 100-2.000.
Mahajan, Devinder: *See*—
Sapienza, Richard S.; Slegeir, William A.; O'Hare, Thomas E.; and Mahajan, Devinder, 4,623,634, Cl. 502-113.000.
Mahurkar, Sakharam D. Method and apparatus for using dual-lumen catheters for extracorporeal treatment. 4,623,327, Cl. 604-4.000.
Maier, Alfred: *See*—
Bumuller, Lothar; Engelmann, Alfred; Kille, Franz; Maier, Alfred; Scharf, Otto; and Worner, Fritz, 4,622,728, Cl. 26-18.500.
Mailhiot, Alfred F., Jr.: *See*—
Dempsey, William J.; Brunken, Walter R.; and Mailhiot, Alfred F., Jr., 4,622,729, Cl. 29-33.00A.
Makiguchi, Naoshi: *See*—
Fuma, Toyoji; Nishikawa, Kazuyuki; Makiguchi, Naoshi; Nagano, Katsuya; Nakayama, Yoshio; and Sasaki, Hiroyuki, 4,623,499, Cl. 264-83.000.
Malcolm, Donald A., to W. R. Grace & Co. Hinge for blow-molded cases. 4,623,071, Cl. 220-337.000.
Malueg, Dennis E.: *See*—
Lloyd, William D.; Win, Maung H.; and Malueg, Dennis E., 4,623,576, Cl. 428-171.000.
Mangone, Domingo. Safety female plug connector. 4,623,209, Cl. 339-75.00P.
Manley, George C.: *See*—
Darby, Samuel E.; and Manley, George C., 4,623,972, Cl. 364-526.000.
Mannesmann-Rexroth GmbH: *See*—
Mucheyer, Norbert, 4,622,883, Cl. 91-388.000.
Mano, Toshihiko: *See*—
Oshima, Hiroyuki; Kodaira, Toshimoto; and Mano, Toshihiko, 4,623,908, Cl. 357-23.700.
Marathon Oil Company: *See*—
Plummer, Mark A., 4,623,445, Cl. 208-108.000.
Marchegiano, Joseph E., to RCA Corporation. Device for providing a substantially flat light field. 4,623,221, Cl. 350-321.000.
Marchetti, Joseph R.; Sanjana, Zal N.; and Elikan, Edward, to Westinghouse Electric Corp. Epoxy crosslinked copolymers of polyanhydrides and laminates therefrom. 4,623,578, Cl. 428-209.000.
Marcus, Randall E. Multi-use femoral intramedullary nail. 4,622,959, Cl. 128-92.0YZ.
Margolin, Irwin: *See*—
Hofke, Fred; and Margolin, Irwin, 4,623,793, Cl. 250-341.000.
Margraf, David J.: *See*—
Portman, Joe L., Jr.; and Margraf, David J., 4,623,030, Cl. 177-210.0FP.
Marino, Michael J., to Interaction Systems, Inc. Method and apparatus for electronic touch mapping. 4,623,757, Cl. 178-18.000.
Marley Tile A.G.: *See*—
Quinnell, Geoffrey C., 4,622,789, Cl. 52-95.000.
Marley-Wylain Company, The: *See*—
Arndt, William C., 4,623,093, Cl. 237-19.000.
Marquez Perez, Miquel; Matas Docampo, Ricardo; Puigmarti Codina, Jose M.; Repolles-Moliner, Jose ; and Serra Sola, Jorge, to Lacer, S.A. 1-azaxanthone for use as therapeutic agent as an antipyretic, analgesic, anti-inflammatory and bronchodilator. 4,623,648, Cl. 514-291.000.
Marsden, Reginald G., to Rolls Royce Motors Limited. Profile checking apparatus. 4,622,756, Cl. 33-556.000.
Marshall, Francis G.: *See*—
Moore, Ralph F.; and Marshall, Francis G., 4,623,957, Cl. 362-200.000.
Martin, Armand: *See*—
Chase, William; and Martin, Armand, 4,623,062, Cl. 206-311.000.
Martin, Joseph K.: *See*—
Montesanto, Ernest C.; and Martin, Joseph K., 4,623,858, Cl. 333-255.000.
Marubashi, Akira, to Mitsubishi Denki Kabushiki Kaisha. Elevator display system with optical power transmission. 4,623,869, Cl. 340-19.00R.
Marvin Glass & Associates: *See*—
Zaruba, John V.; Meyer, Burton C.; Lindsay, Robert L.; and Oppenheim, Michael J., 4,623,319, Cl. 446-373.000.
Maschinenfabriken Bernard Krone GmbH: *See*—
Krone, Bernard; and Ahler, Wilhelm, 4,622,804, Cl. 56-13.900.
Masonite Corporation: *See*—
Cook, Melvin W.; and Schmidt, Carl J., 4,622,791, Cl. 52-241.000.
Massachusetts Institute of Technology: *See*—
Klibanov, Alexander M., 4,623,465, Cl. 210-632.000.
Massingill, John L., to Dow Chemical Company, The. Multifunctional epoxy resins. 4,623,701, Cl. 525-523.000.
Masuda, Mitsuharu: *See*—
Kurosaki, Tomihiro; and Masuda, Mitsuharu, 4,623,743, Cl. 558-105.000.
Masui, Kodo; Tanaka, Shigetoshi; and Kobayashi, Yoshikazu, to Sekisui Kaseihin Kogyo Kabushiki Kaisha. Expandable phenolic resin-coated composite beads, a process for production thereof and a process for molding thereof. 4,623,584, Cl. 428-304.400.
Masumoto, Tsuyoshi; Esashi, Kiyoyuki; and Nose, Masateru, to Shin-Gijutsu Kaihatsu Jigyodan. Amorphous alloys containing iron group elements and zirconium and articles made of said alloys. 4,623,387, Cl. 420-41.000.
Matas Docampo, Ricardo: *See*—
Marquez Perez, Miquel; Matas Docampo, Ricardo; Puigmarti Codina, Jose M.; Repolles-Moliner, Jose ; and Serra Sola, Jorge, 4,623,648, Cl. 514-291.000.
Matej, Jiri : *See*—
Zahalka, Pavel; Stanek, Jaroslav; and Matej, Jiri , 4,624,002, Cl. 373-40.000.
Matekunas, Frederic A., to General Motors Corporation. Engine combustion control with ignition timing by pressure ratio management. 4,622,939, Cl. 123-425.000.
Mathews, John H.; Durocher, Donald F.; and Hampl, Vladimir, Jr., to Kimberly-Clark Corporation. Reduced ignition proclivity smoking article wrapper and smoking article. 4,622,983, Cl. 131-365.000.
Mathie, Gerald W.: *See*—
Van Sickle, Richard G.; and Mathie, Gerald W., 4,622,871, Cl. 82-1.200.
Mathys, Peter: *See*—
Tauscher, Willy; Streiff, Felix; and Mathys, Peter, 4,623,454, Cl. 210-150.000.
Matier, William L.: *See*—
Erhardt, Paul W.; and Matier, William L., 4,623,652, Cl. 514-326.000.
Matsubara, Akinori, to Casio Computer Co., Ltd. Electronic musical instrument. 4,622,879, Cl. 84-1.030.
Matsubayashi, Kazuyuki: *See*—
Saito, Hitoshi; Hatori, Hitoshi; and Matsubayashi, Kazuyuki, 4,623,034, Cl. 181-148.000.
Matsubayashi, Shinji; Kajikawa, Tsuneo; and Arai, Shokichi, to Honda Giken Kogyo Kabushiki Kaisha. Vehicle frame construction for buggies with riding saddles. 4,623,167, Cl. 280-798.000.
Matsuda, Shigeru: *See*—
Jabami, Ryozo; Hamaguchi, Akira; Matsuda, Shigeru; and Ejima, Yasuyuki, 4,622,827, Cl. 62-158.000.
Matsuda, Shinichi. Cleaning apparatus for pipes. 4,622,709, Cl. 15-4.000.
Matsuda, Shinpei: *See*—
Kahara, Toshiki; Matsuda, Shinpei; Ishii, Kenzo; Takeuchi, Seizi; Imahashi, Jinichi; and Honji, Akio, 4,623,415, Cl. 156-325.000.
Matsufuji, Yohji: *See*—
Ichihashi, Hiroo; Toganoh, Shigeo; and Matsufuji, Yohji, 4,623,905, Cl. 346-140.00R.
Matsumoto, Fumio: *See*—
Suga, Yozo; Matsumoto, Fumio; and Nakayama, Tadashi, 4,623,406, Cl. 148-111.000.
Matsumoto, Tokikazu; Honjo, Masahiro; and Kobayashi, Masaaki, to Matsushita Electric Industrial Co., Ltd. Magnetic reproducing apparatus. 4,623,940, Cl. 360-10.300.
Matsumoto, Toshio; Kato, Motokazu; Sato, Kiyosumi; Mizushima, Yoshihiro; and Ohnishi, Katsumi, to Fujitsu Limited. Register control processing system. 4,623,962, Cl. 364-200.000.
Matsumura, Kenichi: *See*—
Okutani, Norio; Matsumura, Kenichi; and Inoue, Toshitsugu, 4,623,253, Cl. 356-375.000.
Matsuo, Satoshi; and Miyajima, Yasuo, to Kabushiki Kaisha Toshiba. Ultrasonic diagnosing apparatus. 4,622,978, Cl. 128-663.000.
Matsuo, Yoshikazu: *See*—
Hayatsu, Hikoya; Nakano, Masahide; and Matsuo, Yoshikazu, 4,623,638, Cl. 502-401.000.
Matsushima, Haruo; and Yamase, Yuuji, to Yoshida Kogyo K. K. Woven slide fastener stringer. 4,623,004, Cl. 139-384.00B.
Matsushita Electric Industrial Co., Ltd.: *See*—
Abe, Syuzi; and Ito, Shin'ichi, 4,622,759, Cl. 34-44.000.
Ibata, Akihiko; and Sakamoto, Yoichi, 4,623,404, Cl. 148-101.000.
Jabami, Ryozo; Hamaguchi, Akira; Matsuda, Shigeru; and Ejima, Yasuyuki, 4,622,827, Cl. 62-158.000.
Kawamura, Ichiro; Fojioka, Yoshitaka; and Fujita, Makoto, 4,623,995, Cl. 369-77.200.
Kondo, Kaneichi; and Ninomiya, Tooru, 4,623,814, Cl. 310-339.000.
Matsumoto, Tokikazu; Honjo, Masahiro; and Kobayashi, Masaaki, 4,623,940, Cl. 360-10.300.
Okutani, Norio; Matsumura, Kenichi; and Inoue, Toshitsugu, 4,623,253, Cl. 356-375.000.
Oshima, Mitsuaki; Izaki, Masataka; Kajino, Jirou; Igarashi, Yoshiaki; and Mitani, Hiroshi, 4,623,930, Cl. 358-222.000.
Saka, Hiroshi; and Tanaka, Toshihide, 4,623,848, Cl. 330-286.000.
Sakamoto, Yoichi, 4,623,926, Cl. 358-188.000.
Takeshita, Isao; Yanagihara, Nobuyuki; Gamo, Takaharu; and Moriwaki, Yoshio, 4,623,018, Cl. 165-104.120.
Waki, Eiichi; Kobayashi, Shigeo; Hashimoto, Yutaka; and Nakai, Miyoji, 4,623,598, Cl. 429-162.000.

Matsuyama, Shinichi: *See*—
Shimizu, Masami; and Matsuyama, Shinichi, 4,623,234, Cl. 354-286.000.

Matta, Joseph J.: *See*—
Schmitz, Anthony N.; and Matta, Joseph J., 4,623,921, Cl. 358-143.000.

Mattel, Inc.: *See*—
Tsiknopoulos, Phedon J.; and Sweet, Roger H., 4,623,318, Cl. 446-330.000.

Matzkanin, Randy L., to Alternative Energy Resources. Solar collector assembly and kit. 4,622,951, Cl. 126-450.000.

Maurice, David M., to Alpha Group, Inc. Liquid dispensing apparatus. 4,623,337, Cl. 604-298.000.

Max Co. Ltd.: *See*—
Kurosawa, Mitsuteru, 4,623,082, Cl. 227-7.000.

Maximov, Jury M.; Ziatdinov, Mansur K.; Kolmakov, Anatoly D.; Raskolenko, Larisa G.; Merzhanov, Alexandr G.; Borovinskaya, Inna P.; and Dubovitsky, Fedor I., to Nauchno-Issledovatelsky Institut Prikladnoi Matematiki Pri Tomskom Gosudarstvennov Universitete; and Institut Khimicheskoi Fiziki Akademii Nauk SSSR. Metal composition and process for producing same. 4,623,402, Cl. 148-20.300.

Maxner, Richard B.: *See*—
Mirley, William H., Jr.; and Maxner, Richard B., 4,622,740, Cl. 29-715.000.

Maytag Company, The: *See*—
Davis, G. Jerry; and Mellinger, John C., 4,623,179, Cl. 292-201.000.

Mazumder, Nikhil C.: *See*—
Thompson, Michael D.; and Mazumder, Nikhil C., 4,623,803, Cl. 307-475.000.

McCartney, Thomas: *See*—
Klingbiel, August G.; and McCartney, Thomas, 4,623,834, Cl. 323-258.000.

McConnell, Philip J.: *See*—
Getz, Marion E.; Harris, Christopher J.; McConnell, Philip J.; Norton, Mark L.; Garrett, John P.; and Harding, Angela I., 4,623,964, Cl. 364-401.000.

McCullough, Michael A.: *See*—
Flora, Laurence P.; and McCullough, Michael A., 4,623,805, Cl. 307-602.000.

McDonnell Douglas Corporation: *See*—
Tihanyi, Peter L.; Mott, Jeffrey S.; Vollmer, Hubert J.; Sovak, Maryanne; and Rojas, Sonnia C., 4,623,086, Cl. 228-123.000.

McFarland, John: *See*—
Cameron, Gordon M.; and McFarland, John, 4,622,921, Cl. 122-7.00C.

McFee, John E.: *See*—
Bell, Malcolm E.; McFee, John E.; Morewood, Henry W.; and Coffey, Clayton G., 4,623,842, Cl. 324-245.000.

McGuire, Kenneth J.; Dahlberg, John R.; and Hyatt, Charles J., to PPG Industries, Inc. Robot end effector to transfer shaped parts. 4,623,296, Cl. 414-730.000.

McGuirk, Paul R.: *See*—
Gilligan, Paul J.; McGuirk, Paul R.; and Witty, Michael J., 4,623,650, Cl. 514-312.000.

McKeen, Lawrence W.: *See*—
Huybrechts, Jozef T.; and McKeen, Lawrence W., 4,623,565, Cl. 428-35.000.

McKeon, Ronald J.: *See*—
Yaghmaie, Farrokh; Vasconcellos, Stephen R.; and McKeon, Ronald J., 4,623,359, Cl. 44-51.000.

McKeough, David T.: *See*—
Chang, Wen-Hsuan; and McKeough, David T., 4,623,697, Cl. 525-61.000.

McKinney, James C. Adjustable safety latch. 4,623,177, Cl. 292-87.000.

McLellan, Edward J.: *See*—
Wolrich, Gilbert; McLellan, Edward J.; Yodlowski, Robert; and Dobberpuhl, Daniel, 4,623,981, Cl. 364-736.000.

McMillen, Robert J. Packet switched multiple queue NXM switch node and processing method. 4,623,996, Cl. 370-60.000.

McNeilab, Inc.: *See*—
Hartranft, Thomas P., 4,623,328, Cl. 604-4.000.

McPherson, James O.: *See*—
Efron, Edward; McPherson, James O.; and Kim, Young B., 4,623,837, Cl. 324-77.00R.

McWhorter, William O.: *See*—
Felton, Clinton D.; Gibson, Baylor D.; Jamison, Charles E.; McWhorter, William O.; and Serad, George A., 4,623,438, Cl. 204-168.000.

Meckel, Walter: *See*—
Henning, Wolfgang; Hombach, Rudolf; Meckel, Walter; and Reiff, Helmut, 4,623,416, Cl. 156-331.700.

Medical College of Wisconsin, Inc.: *See*—
Mehdizadeh, Mehrdad; Froncisz, Wojciech; and Hyde, James S., 4,623,835, Cl. 324-58.50R.

Medical Engineering Corporation: *See*—
Finney, Roy P., 4,622,958, Cl. 128-79.000.

Meerhof, Louis J.: *See*—
Roos, Dirk; Voetman, Alwin A.; Meerhof, Louis J.; and Lubin, Bertram, 4,623,620, Cl. 435-7.000.

Meguerdichian, Gary M., to Otis Elevator Company. Digital signal analyzer with analog display. 4,623,983, Cl. 364-900.000.

Mehdizadeh, Mehrdad; Froncisz, Wojciech; and Hyde, James S., to Medical College of Wisconsin, Inc. Web thickness sensor using loop-gap resonator. 4,623,835, Cl. 324-58.50R.

Mehra, Yuv R., to El Paso Hydrocarbons Company. Utilizing the Mehra process for processing and BTU upgrading of nitrogen-rich natural gas streams. 4,623,371, Cl. 62-17.000.

Mehrgardt, Soenke, to Deutsche ITT Industries GmbH. Digital phase detector. 4,623,873, Cl. 340-347.0SY.

Meier, Paul F.; and Pennella, Filippo, to Phillips Petroleum Company. Fischer-Tropsch catalysts. 4,623,669, Cl. 518-719.000.

Meindl, Hubert: *See*—
Bernheim, Michael; Meindl, Hubert; Rohringer, Peter; Wegmuller, Hans; and Werthemann, Dieter, 4,623,428, Cl. 162-158.000.

Melchior, Robert A., to North American Philips Corporation. Mechanical drive with bi-directional override. 4,623,322, Cl. 464-160.000.

Melgoza, Raymond. Onion planter. 4,622,906, Cl. 111-84.000.

Melles Griot, Irvine Company: *See*—
Forkner, John F., 4,623,225, Cl. 350-421.000.

Mellinger, John C.: *See*—
Davis, G. Jerry; and Mellinger, John C., 4,623,179, Cl. 292-201.000.

Memtec Limited: *See*—
Ford, Douglas L.; Kopp, Clinton V.; and Anderson, Eric W., 4,623,463, Cl. 210-500.290.

Menard, Kevin P.; Butler, James R.; and Watson, James M., to Cosden Technology, Inc. Polymerization inhibitor for vinyl aromatic compounds. 4,623,430, Cl. 203-9.000.

Menard, Kevin P.: *See*—
Kendall, Debra L.; Butler, James R.; and Menard, Kevin P., 4,623,431, Cl. 203-9.000.

Menassa, Karim: *See*—
Lindmayer, Istvan; and Menassa, Karim, 4,623,332, Cl. 604-68.000.

Merck & Co., Inc.: *See*—
Doherty, James B.; Ashe, Bonnie M.; Finke, Paul E.; Firestone, Raymond A.; Shah, Shrenik K.; and Zimmerman, Morris, 4,623,645, Cl. 514-200.000.

Merrell Dow Pharmaceuticals Inc.: *See*—
Grisar, J. Martin; Dage, Richard C.; and Schnettler, Richard A., 4,623,651, Cl. 514-342.000.

Merrell, Ronald W., to Leslie Hartridge Ltd. Anti-backlash device. 4,623,278, Cl. 403-362.000.

Merrill, Duane F.: *See*—
Traver, Frank J.; John, Simon M.; and Merrill, Duane F., 4,623,700, Cl. 525-478.000.

Merzhanov, Alexandr G.: *See*—
Maximov, Jury M.; Ziatdinov, Mansur K.; Kolmakov, Anatoly D.; Raskolenko, Larisa G.; Merzhanov, Alexandr G.; Borovinskaya, Inna P.; and Dubovitsky, Fedor I., 4,623,402, Cl. 148-20.300.

Mestman, Scott J.: *See*—
Brunelli, Richard J.; and Mestman, Scott J., 4,623,288, Cl. 409-84.000.

Metallized Products, Inc.: *See*—
Keough, Allen H., 4,623,594, Cl. 428-500.000.

Metalquimia, S.A., San Ponc de la Barca: *See*—
Corominas, Narciso L., 4,622,892, Cl. 99-533.000.

Metcal, Inc.: *See*—
Derbyshire, Rodney L.; and Busch, Paul F., 4,623,401, Cl. 148-13.000.

Meyer, Burton C.: *See*—
Zaruba, John V.; Meyer, Burton C.; Lindsay, Robert L.; and Oppenheim, Michael J., 4,623,319, Cl. 446-373.000.

Meyer, Rolf-Volker: *See*—
von Bittera, Miklos; Dhein, Rolf; Meyer, Rolf-Volker; and Rupp, Roland, 4,623,346, Cl. 604-896.000.

Michaely, William J.; and Knudsen, Christopher, to Stauffer Chemical Co. Benzylacrylaryl amide herbicidal compounds and methods of use. 4,623,384, Cl. 71-105.000.

Michel, Rudolf: *See*—
Deschler, Ulrich; Buder, Wolfgang; Kleinschmit, Peter; and Michel, Rudolf, 4,623,740, Cl. 536-421.000.

Midorikawa, Yuichiro: *See*—
Kusakabe, Hitoshi; and Midorikawa, Yuichiro, 4,623,626, Cl. 435-191.000.

Midwest Plastic Fabricators: *See*—
Cross, Andrew L.; and Moran, Thomas F., Jr., 4,623,506, Cl. 264-573.000.

Mikami, Keigo: *See*—
Hatano, Hirofumi; Yamazaki, Masayasu; Sasaki, Atsushi; and Mikami, Keigo, 4,623,311, Cl. 432-106.000.

Mikuni Kogyo Kabushiki Kaisha: *See*—
Kimijima, Yoshiaki; and Kikuchi, Kunio, 4,623,310, Cl. 431-261.000.

Mildenberger, Hilmar: *See*—
Schmierer, Roland; Handte, Reinhard; Mildenberger, Hilmar; Bauer, Klaus; Bieringer, Hermann; and Burstell, Helmut, 4,623,380, Cl. 71-92.000.

Miles Laboratories, Inc.: *See*—
Fernandes, Peter M.; and Lundblad, John L., 4,623,717, Cl. 530-380.000.

Miller, Kevin P.: *See*—
Pittet, Alan O.; Muralidhara, Ranya; Miller, Kevin P.; and Luccarelli, Domenick, Jr., 4,623,538, Cl. 424-52.000.
Pittet, Alan O.; Muralidhara, Ranya; Miller, Kevin P.; Luccarelli, Domenick, Jr.; and Vock, Manfred H., 4,623,547, Cl. 426-535.000.

Miller, Melvin L. Apparatus for attachment to the side of a building for holding a rain gutter in place. 4,622,785, Cl. 52-11.000.

Miller, Michael J.: *See*—
Scheithauer, Richard A.; Vanderpool, Clarence D.; and Miller, Michael J., 4,623,534, Cl. 423-593.000.

Miller, Roy W. Hatch cover and locking structure. 4,622,902, Cl. 105-377.000.
Miller, Stephen C.: *See—*
Lewis, Steven C.; Love, Robert B.; Miller, Stephen C.; Shing, Yuh-han; Sibert, John W.; Tanner, David P.; and Tran, Nang T., 4,623,601, Cl. 430-69.000.
Miller, Steven M.: *See—*
Flaxington, David; Kay, James; and Miller, Steven M., 4,622,818, Cl. 60-624.000.
Minagawa, Motonobu; Nakahara, Yutaka; Shibata, Toshihiro; and Arata, Ryozo, to Adeka Argus Chemical Co., Ltd. Thermosetting synthetic resin lacquer compositions of improved light stability. 4,623,685, Cl. 524-99.000.
Miner, Gerald E., Jr.: *See—*
Glanz, Ronald P.; and Miner, Gerald E., Jr., 4,622,718, Cl. 17-49.000.
Minnesota Mining and Manufacturing Company: *See—*
Alexander, Jerry L.; Narayan, Sankar B.; Gerfast, Sten R.; and Nelson, Charles E., 4,623,570, Cl. 428-65.000.
Danby, Hal C.; and Beigler, Myron A., 4,622,975, Cl. 128-642.000.
Kistner, John F., 4,623,676, Cl. 522-15.000.
Ou-Yang, David T., 4,623,392, Cl. 106-27.000.
Stenemann, Heinrich F., 4,623,280, Cl. 404-94.000.
Minolta Camera Kabushiki Kaisha: *See—*
Kato, Hitoshi; Kohri, Toshitaro; and Machida, Junji, 4,623,605, Cl. 430-110.000.
Taniguchi, Nobuyuki; Ishikawa, Norio; Akada, Yasuaki; Egawa, Takeshi; and Kawamura, Kunio, 4,623,238, Cl. 354-406.000.
Mirley, William H., Jr.; and Maxner, Richard B., to USM Corporation. Electrical component lead sensor. 4,622,740, Cl. 29-715.000.
Mischutin, Vladimir, to White Chemical Corporation. Flame retardant textile fabrics. 4,623,583, Cl. 428-242.000.
Mishima, Fumiyuki: *See—*
Hanyu, Susumu; Takenoya, Hideaki; and Mishima, Fumiyuki, 4,623,275, Cl. 400-662.000.
Mishima, Michiharu: *See—*
Umeya, Kaoru; Mishima, Michiharu; and Sugata, Yoshihiro, 4,623,586, Cl. 428-324.000.
Mishler, Ralph E.: *See—*
Baker, Keith F.; Kowalski, Richard M.; and Mishler, Ralph E., 4,623,860, Cl. 335-170.000.
Misoph, Helmut, to Diehl GmbH & Co. Regulating system for guided missiles traveling at supersonic speed. 4,623,107, Cl. 244-3.220.
Missry Associates, Inc.: *See—*
Pfaff, Peter R., 4,622,776, Cl. 47-67.000.
Mita Industrial Co., Ltd.: *See—*
Hayashi, Kiyoshi; Hori, Setsuo; Hirata, Nobuyuki; Kobayashi, Kazuhiro; and Mizuno, Masayuki, 4,623,242, Cl. 355-14.00R.
Irie, Yoichiro; Kimura, Hiroshi; Hisajima, Masahiko; Shibata, Kiyoshi; and Ycshikawa, Yasuhiko, 4,623,137, Cl. 271-160.000.
Mitamura, Kenichi: *See—*
Chujo, Satoru; and Mitamura, Kenichi, 4,622,754, Cl. 33-356.000.
Mitani, Hiroshi: *See—*
Oshima, Mitsuaki; Izaki, Masataka; Kajino, Jirou; Igarashi, Yoshiaki; and Mitani, Hiroshi, 4,623,930, Cl. 358-222.000.
Mitchell, Matthew P. Stirling cycle engine and heat pump. 4,622,813, Cl. 60-522.000.
Mitchell, Thomas, to Southland Corporation. Temperature sensing using ultrasonic system and movable target. 4,623,264, Cl. 374-117.000.
Mitsubishi Chemical Industries Limited: *See—*
Niwa, Toshio; Himeno, Kiyoshi; and Hihara, Toshio, 4,623,719, Cl. 534-636.000.
Mitsubishi Denki Kabushiki Kaisha: *See—*
Hamano, Isao; Morishita, Akira; Akae, Yoshifumi; Nishimura, Youji; Tanaka, Toshinori; and Yabunaka, Kiyoshi, 4,622,930, Cl. 123-179.00K.
Kamaike, Hiroshi, 4,623,042, Cl. 187-29.00R.
Kashiwamura, Kazuo; Yoshida, Tadahiro; Koda, Toshihide; and Fujiwara, Michio, 4,623,151, Cl. 277-24.000.
Kobayashi, Hiroo, 4,623,821, Cl. 313-478.000.
Marubashi, Akira, 4,623,869, Cl. 340-19.00R.
Mukai, Fumiaki; and Ito, Shuji, 4,623,935, Cl. 358-280.000.
Nakamura, Toshiyuki; Sugihara, Masahiro; Inaba, Tsutomu; and Kimura, Tadashi, 4,623,306, Cl. 418-55.000.
Onizuka, Masahiro, 4,623,773, Cl. 219-69.00D.
Shinsei, Kiyoichi; and Takada, Hiroaki, 4,622,810, Cl. 60-286.000.
Tachino, Kenzo, 4,624,005, Cl. 377-20.000.
Yamamoto, Takashi; and Ishimori, Akira, 4,622,971, Cl. 128-395.000.
Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Hatano, Hirofumi; Yamazaki, Masayasu; Sasaki, Atsushi; and Mikami, Keigo, 4,623,311, Cl. 432-106.000.
Mitsui Petrochemical Industries, Ltd.: *See—*
Yoshida, Hiromi; Miyamura, Masataka; Funakoshi, Katsumi; and Nagano, Riichiro, 4,623,610, Cl. 430-326.000.
Mitsuoka, Katsuya; Narishige, Shinji; Kumagai, Akira; Sano, Masaaki; Hara, Shinichi; and Hanazono, Masanobu, to Hitachi, Ltd. Thin film of Ni-Co-Fe ternary alloy and process for producing the same. 4,623,439, Cl. 204-192.200.
Mittelmeier, Heinz: *See—*
Ries, Peter; Baumgart, Frank; and Mittelmeier, Heinz, 4,623,553, Cl. 427-2.000.
Mitton, Rodney A.: *See—*
Cametti, Richard J.; and Mitton, Rodney A., 4,622,860, Cl. 74-443.000.
Miura, Morikazu: *See—*
Mutoh, Yoshihiko; and Miura, Morikazu, 4,623,670, Cl. 521-61.000.
Miyagaki, Hisanori; Higashi, Toshihiko; Yokogawa, Atsushi; Shimada, Yoshihiro; Kurihara, Nobuo; Nishikawa, Mitsuyo; Sato, Yoshio; Watanabe, Atsumi; and Morooka, Yasuo, to Hitachi, Ltd. Combustion control method. 4,622,922, Cl. 122-449.000.
Miyagi, Tosimi: *See—*
Kikuchi, Akihiro; and Miyagi, Tosimi, 4,623,754, Cl. 174-52.00R.
Miyahara, Sadayasu: *See—*
Takagiwa, Hiroyuki; Tnuzita, Kenzi; Yamakawa, Goichi; Tomono, Makoto; Wakimoto, Saburo; Miyahara, Sadayasu; Ishida, Tetsumasa; Hyosu, Yoshihiko; and Wada, Tsuneo, 4,623,604, Cl. 430-109.000.
Miyajima, Yasuo: *See—*
Matsuo, Satoshi; and Miyajima, Yasuo, 4,622,978, Cl. 128-663.000.
Miyajiri, Tetsuo: *See—*
Takimoto, Hiroaki; Miyajiri, Tetsuo; Turita, Tamio; and Fujikawa, Masanori, 4,622,988, Cl. 137-209.000.
Miyake, Toshio: *See—*
Nakamura, Satoshi; Hijiya, Hiromi; and Miyake, Toshio, 4,623,394, Cl. 106-122.000.
Miyamura, Masataka: *See—*
Yoshida, Hiromi; Miyamura, Masataka; Funakoshi, Katsumi; and Nagano, Riichiro, 4,623,610, Cl. 430-326.000.
Mizerak, Dennis S., to Babcock & Wilcox Company, The. Apparatus and method for continuously measuring mass flow. 4,622,858, Cl. 73-861.380.
Mizuhara, Howard, to GTE Products Corporation. Ductile low temperature brazing alloy. 4,623,513, Cl. 420-470.000.
Mizukami, Atsuo: *See—*
Kishi, Yasuo; Taniguchi, Hiroyuki; Sakai, Souichi; Katoh, Hitoshi; and Mizukami, Atsuo, 4,623,751, Cl. 136-244.000.
Mizuno, Masayuki: *See—*
Hayashi, Kiyoshi; Hori, Setsuo; Hirata, Nobuyuki; Kobayashi, Kazuhiro; and Mizuno, Masayuki, 4,623,242, Cl. 355-14.00R.
Mizushima, Yoshihiro: *See—*
Matsumoto, Toshio; Kato, Motokazu; Sato, Kiyosumi; Mizushima, Yoshihiro; and Ohnishi, Katsumi, 4,623,962, Cl. 364-200.000.
Mizutani, Hiroshi: *See—*
Ito, Osamu; Mizutani, Hiroshi; and Nishizawa, Kazunori, 4,623,342, Cl. 604-385.00A.
Mobi-Dock, Inc.: *See—*
Sprague, Wendell, 4,623,161, Cl. 280-414.100.
Mobil Oil Corporation: *See—*
Chew, Ju-Nam, 4,623,283, Cl. 405-270.000.
Derouane, Eric G.; Valyocsik, Ernest W.; and von Ballmoos, Roland, 4,623,527, Cl. 423-306.000.
Haddad, James H.; and Owen, Hartley, 4,623,446, Cl. 208-113.000.
Herrington, Fox J., 4,623,323, Cl. 493-338.000.
Holden, M. James, 4,623,088, Cl. 229-2.50R.
Prader, Randolph D., 4,623,111, Cl. 248-97.000.
Stowe, Lawrence R., 4,623,021, Cl. 166-250.000.
Modi Partnership: *See—*
Faber, Lawrence, 4,623,782, Cl. 235-379.000.
Modler, H. Wayne: *See—*
Elliot, James I.; Timbers, Gordon E.; Modler, H. Wayne; and Allen, Robert W., 4,623,541, Cl. 424-85.000.
Moehlman, Vernon C.; Hicke, David W.; and Stagg, George A., Jr., to Reagent Chemical and Research, Inc. Environmentally acceptable frangible target compositions. 4,623,150, Cl. 273-362.000.
Moisson, Marc F.; and Wisecarver, Martin L., to Raychem Corporation. Optical fiber chuck. 4,623,156, Cl. 279-106.000.
Molev, Igor I.: *See—*
Ivanov, Mikhail G.; Golov, Veniamin G.; Kuzmin, Vladimir N.; Alyakrinskaya, Aida I.; Mushy, Roman Y.; Kovalev, Alexei D.; Shutova, Nadezhda V.; Rodionov, Jury A.; Molev, Igor I.; Yakovleva, Ljudmila S.; Berezin, Vitaly B.; Petrashko, Alexei I.; Shuev, Gennady M.; Bukin, Boris A.; Belkina, Tamara M., deceased; and Belkin, Naum S., administrator, 4,623,731, Cl. 548-374.000.
Molex Incorporated: *See—*
Dambach, Philip J.; and Kachlic, Jerry D., 4,623,211, Cl. 339-143.00R.
Mollmer, Frank: *See—*
Binder, Josef; Cutter, David; Henning, Wolfgang; Schaber, Hans-Christian; Mollmer, Frank; and Reichert, Hansjorg, 4,622,856, Cl. 73-727.000.
Monarch Marking Systems, Inc.: *See—*
Huggins, Orville C., 4,623,103, Cl. 242-71.800.
Mondial S.p.A.: *See—*
Gallone, Fiorenzo, 4,623,201, Cl. 384-53.000.
Monreal, F. Javier. Sporting knee boot for sliding, skating and skiing. 4,623,158, Cl. 280-11.120.
Monte, Salvatore J.: *See—*
Sugerman, Gerald; and Monte, Salvatore J., 4,623,738, Cl. 556-17.000.
Montesanto, Ernest C.; and Martin, Joseph K., to Ford Aerospace & Communications Corporation. Quick connect waveguide coupler. 4,623,858, Cl. 333-255.000.
Montres Rado S.A.: *See—*
Gogniat, Paul; and Loth, Eric, 4,623,262, Cl. 368-294.000.
Mookherjee, Braja D.: *See—*
Evers, William J.; Stork, Gilbert; Mookherjee, Braja D.; and Heinsohn, Howard H., Jr., 4,623,749, Cl. 560-262.000.

Moon, John J., Jr.; Surjaatmadja, Jim B.; and Ehlert, Mark C., to Halliburton Company. Consistency and static gel strength measuring device and method. 4,622,846, Cl. 73-59.000.

Moore, Carl O.: *See*—
Katt, Judy L.; Moore, Carl O.; and Eastman, James E., 4,623,549, Cl. 426-548.000.

Moore, Eugene R.; and Lefevre, Norman A., to Dow Chemical Company, The. Method for shear coagulation of latex resins. 4,623,678, Cl. 523-335.000.

Moore, Ralph F.; and Marshall, Francis G., to Bridgeport Metal Goods Manufacturing Company, The. Battery powered auxiliary lighting fixture with a timer. 4,623,957, Cl. 362-200.000.

Moore, Thomas M.: *See*—
Long, Dabbs C.; Anderson, Gerald R.; Linman, Dale L.; and Moore, Thomas M., 4,622,836, Cl. 72-31.000.

Moran, Thomas F., Jr.: *See*—
Cross, Andrew L.; and Moran, Thomas F., Jr., 4,623,506, Cl. 264-573.000.

Moreau, Claude R. M. Reversible and advertising greeting card. 4,622,768, Cl. 40-124.100.

Moreco Energy, Inc.: *See*—
O'Connell, John P.; and Wozniak, John F., 4,623,448, Cl. 208-262.000.

Morewood, Henry W.: *See*—
Bell, Malcolm E.; McFee, John E.; Morewood, Henry W.; and Coffey, Clayton G., 4,623,842, Cl. 324-245.000.

Morgan Adhesives Company: *See*—
Questel, John M.; and Madonia, Ralph J., 4,623,413, Cl. 156-247.000.

Mori, Kihei: *See*—
Yamamoto, Ryuzo; Mori, Kihei; Omoto, Yorihiko; Iai, Hidehito; and Kikuchi, Toru, 4,623,571, Cl. 428-68.000.

Mori, Masashi: *See*—
Tods, Masumi; Mori, Masashi; Nonaka, Shingo; Kyoden, Hiroshi; Ichikawa, Kenji; and Hamazaki, Yoshihisa, 4,623,393, Cl. 106-38.220.

Mori, Shinji, to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho. Retractor. 4,623,104, Cl. 242-107.40R.

Mori, Yoshinobu; and Tada, Akira, to O-M Limited. Folding insert for forming a jacket. 4,623,325, Cl. 493-468.000.

Morimoto, Masafumi; Yoshida, Kunio; and Nakanishi, Tosaku, to Sharp Kabushiki Kaisha. Language translator with circuitry for detecting and holding words not stored in dictionary ROM. 4,623,985, Cl. 364-900.000.

Morishita, Akira: *See*—
Hamano, Isao; Morishita, Akira; Akae, Yoshifumi; Nishimura, Youji; Tanaka, Toshinori; and Yabunaka, Kiyoshi, 4,622,930, Cl. 123-179.00K.

Moriwaki, Yoshio: *See*—
Takeshita, Isao; Yanagihara, Nobuyuki; Gamo, Takaharu; and Moriwaki, Yoshio, 4,623,018, Cl. 165-104.120.

Moriya, Koichi: *See*—
Kurahashi, Yoshio; Shiokawa, Kozo; Goto, Toshio; Kagabu, Shinzo; Kamochi, Atsumi; Moriya, Koichi; and Hayakawa, Hidenori, 4,623,377, Cl. 71-92.000.

Morooka, Yasuo: *See*—
Miyagaki, Hisanori; Higashi, Toshihiko; Yokogawa, Atsushi; Shimada, Yoshihiro; Kurihara, Nobuo; Nishikawa, Mitsuyo; Sato, Yoshio; Watanabe, Atsumi; and Morooka, Yasuo, 4,622,922, Cl. 122-449.000.

Morris, Lester; and Singh, Hakam, to Products Research & Chemical Corp. Modified disulfide polymer composition and method for making same from mercaptan terminated disulfide polymer and diethyl formal mercaptan terminated polysulfide. 4,623,711, Cl. 528-375.000.

Morris, Merle E.; and Senft, Stephen P., to GTE Products Corporation. Incandescent lamp having two lead-in conductors sealed within one end thereof. 4,623,817, Cl. 313-275.000.

Morys, Zygmunt A.: *See*—
Biolik, Felicjan J.; and Morys, Zygmunt A., 4,623,517, Cl. 422-40.000.

Mosimann, Walter: *See*—
Back, Gerhard; and Mosimann, Walter, 4,623,358, Cl. 8-620.000.

Motegi, Kiyoshi; and Otani, Kichiro, to Ajinomoto Co., Inc. Low-calorie candies. 4,623,543, Cl. 426-103.000.

Motohashi, Minoru: *See*—
Kurosaki, Masanori; Aoyagi, Yoshio; Ueki, Yoshiharu; Kaneko, Yukihiro; Motohashi, Minoru; Sakaguchi, Shozaburo; and Sawaki, Manabu, 4,623,992, Cl. 369-6.000.

Motorola, Inc: *See*—
Dahl, Randy L., 4,622,898, Cl. 102-237.000.

Motorola, Inc.: *See*—
Bickley, Robert H.; and Murray, Steven A., 4,623,856, Cl. 333-205.000.
Edwards, Arthur J., 4,623,833, Cl. 322-28.000.
LaMacchia, Michael P., 4,623,846, Cl. 328-61.000.
Stinson, Michael K.; Hines, William L.; and Hesser, David J., 4,623,841, Cl. 324-223.000.

Motoyama, Shimesu; Kurita, Kaoru; Sakashita, Shizuka; Takei, Narimichi; and Ohno, Shigeru, to Freund Industrial Co., Ltd. Granulating and coating machine. 4,623,098, Cl. 241-46.040.

Mott, Jeffrey S.: *See*—
Tihanyi, Peter L.; Mott, Jeffrey S.; Vollmer, Hubert J.; Sovak, Maryanne; and Rojas, Sonnia C., 4,623,086, Cl. 228-123.000.

Moyer, Carl L.: *See*—
Brown, Christopher K.; Kensinger, Lex D.; Klopp, Gregory S.; Long, Alden O., Jr.; Moyer, Carl L.; Over, William R.; and Walter, Herman D., 4,623,293, Cl. 414-126.000.

MTS Vektronics Corporation: *See*—
Eaton, Homer L.; and Schmidt, Joe, 4,623,797, Cl. 250-560.000.

Muacevic, Gojko: *See*—
Casals-Stenzel, Jorge; Weber, Karl-Heinz; Walther, Gerhard; Harreus, Albrecht; and Muacevic, Gojko, 4,623,646, Cl. 514-220.000.

Mucheyer, Norbert, to Mannesmann-Rexroth GmbH. Apparatus for positioning a movable member. 4,622,883, Cl. 91-388.000.

Mukai, Fumiaki; and Ito, Shuji, to Mitsubishi Denki Kabushiki Kaisha. Picture extracting apparatus. 4,623,935, Cl. 358-280.000.

Mukai, Teruo: *See*—
Sasaki, Noboru; Iwata, Yasuji; and Mukai, Teruo, 4,622,839, Cl. 72-138.000.

Muller, Bernard L.: *See*—
Schulte-Elte, Karl-Heinrich; Ohloff, Gunther; Muller, Bernard L.; and Giersch, Wolfgang K., 4,623,750, Cl. 568-822.000.

Muller, Johann: *See*—
Konig, Dieter; Schickhaus, Heinz; and Muller, Johann, 4,622,783, Cl. 51-376.000.

Muller, Norbert: *See*—
Henkel, Hans-Joachim; and Muller, Norbert, 4,623,755, Cl. 174-110.0SR.

Muller, Reiner: *See*—
Bischoff, Gilbert; Muller, Reiner; and Gath, Dietmar, 4,622,882, Cl. 91-369.00R.

Multi-Tex Products Corp.: *See*—
Quon, Joe S., 4,623,579, Cl. 428-215.000.

Mune, Charles: *See*—
Krasij, Bohdan; and Mune, Charles, 4,623,861, Cl. 335-202.000.

Muralidhara, Ranya: *See*—
Pittet, Alan O.; Muralidhara, Ranya; Miller, Kevin P.; and Luccarelli, Domenick, Jr., 4,623,538, Cl. 424-52.000.
Pittet, Alan O.; Muralidhara, Ranya; Miller, Kevin P.; Luccarelli, Domenick, Jr.; and Vock, Manfred H., 4,623,547, Cl. 426-535.000.

Muramatsu, Keiji: *See*—
Oda, Noriyuki; Kido, Nobuyuki; and Muramatsu, Keiji, 4,623,017, Cl. 165-82.000.

Muranushi, Jun, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of obtaining X-ray CT image and apparatus for utilizing the same method. 4,624,007, Cl. 378-4.000.

Muraoka, Tsutomu: *See*—
Koide, Teruhiko; Kawaguchi, Teruhiko; Suzuki, Hideyuki; and Muraoka, Tsutomu, 4,623,192, Cl. 297-216.000.

Murata Kikai Kabushi Kaisha: *See*—
Ohashi, Kenji; and Uehara, Masao, 4,622,713, Cl. 15-312.00R.

Murata Kikai Kabushiki Kaisha: *See*—
Ito, Chihiro, 4,622,872, Cl. 82-2.00R.

Murata Manufacturing Co., Ltd.: *See*—
Kikuchi, Akihiro; and Miyagi, Tosimi, 4,623,754, Cl. 174-52.00R.
Nishikawa, Toshio; Ishikawa, Youhei; Wada, Hidekazu; and Takehara, Koichi, 4,623,857, Cl. 333-219.000.

Murayama, Yasushi: *See*—
Tanaka, Kiyoharu; Ohno, Akio; Murayama, Yasushi; Hoshino, Osamu; and Takada, Yusaku, 4,622,916, Cl. 118-688.000.

Murdoch, Henry W.; and Schumacher, Percy W., to Reed Tool Company. Seal assembly for drill bits. 4,623,028, Cl. 175-371.000.

Murex Corporation: *See*—
Hossom, Miles G.; and Jacob, Dinesh A., 4,623,461, Cl. 210-445.000.

Murooka, Rikichi: *See*—
Yokokawa, Hidemi; Murooka, Rikichi; Fukuzawa, Miyuki; and Tomioka, Machiko, 4,623,984, Cl. 364-900.000.

Murphy, Melvin E.; and Gohara, Wadie F., to Babcock & Wilcox Company, The. Combined fluidized bed calciner and pulverized coal boiler and method of operation. 4,622,904, Cl. 110-263.000.

Murray, Steven A.: *See*—
Bickley, Robert H.; and Murray, Steven A., 4,623,856, Cl. 333-205.000.

Mushy, Roman Y.: *See*—
Ivanov, Mikhail G.; Golov, Veniamin G.; Kuzmin, Vladimir N.; Alyakrinskaya, Aida I.; Mushy, Roman Y.; Kovalev, Alexei D.; Shutova, Nadezhda V.; Rodionov, Jury A.; Molev, Igor I.; Yakovleva, Ljudmila S.; Berezin, Vitaly B.; Petrashko, Alexei I.; Shuev, Gennady M.; Bukin, Boris A.; Belkina, Tamara M., deceased; and Belkin, Naum S., administrator, 4,623,731, Cl. 548-374.000.

Musick, Stanley D. Airplane. 4,623,108, Cl. 244-13.000.

Muto, Takeo, to Citizen Watch Co., Ltd. Electronic timepiece with a chronograph system. 4,623,261, Cl. 368-80.000.

Mutoh, Yoshihiko; and Miura, Morikazu, to Asahi Kasei Kogyo Kabushiki Kaisha. Porous fluorine resin membrane and process for preparing the same. 4,623,670, Cl. 521-61.000.

Myrabo, Arne L.: *See*—
Glesius, Frederick L.; Kroon, John C.; Schneider, Donald A.; and Myrabo, Arne L., 4,623,508, Cl. 376-254.000.

Nabeshima, Daiki; and Nakane, Hiroshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Scanning servo system for optical-disc information reproducing apparatus. 4,623,994, Cl. 369-44.000.

Nabisco Brands, Inc.: *See*—
Rapp, Harold, 4,623,552, Cl. 426-575.000.

Nacht, Sergio: *See*—
Gans, Eugene; Nacht, Sergio; and Yeung, David, 4,623,667, Cl. 514-762.000.
Nagai, Masaru: *See*—
Yamada, Minoru; Ito, Eiji; and Nagai, Masaru, 4,623,233, Cl. 354-229.000.
Nagamori, Kiyonobu: *See*—
Ando, Masamoto; and Nagamori, Kiyonobu, 4,623,200, Cl. 303-22.00R.
Nagano, Katsuya: *See*—
Fuma, Toyoji; Nishikawa, Kazuyuki; Makiguchi, Naoshi; Nagano, Katsuya; Nakayama, Yoshio; and Sasaki, Hiroyuki, 4,623,499, Cl. 264-83.000.
Nagano, Riichiro: *See*—
Yoshida, Hiromi; Miyamura, Masataka; Funakoshi, Katsumi; and Nagano, Riichiro, 4,623,610, Cl. 430-326.000.
Nagano, Toshiaki, to Shinsei Kogyo Co., Ltd. Metamorphic radio-controlled traveling toy. 4,623,317, Cl. 446-289.000.
Nagaoka, Shinji: *See*—
Saito, Takeo; and Nagaoka, Shinji, 4,623,231, Cl. 354-21.000.
Nagasawa, Shinji, to NOK Corporation. Radial oil seal. 4,623,153, Cl. 277-153.000.
Nagashima, Masayoshi, to Kabushiki Kaisha Toshiba. Method and apparatus for printing an image. 4,623,901, Cl. 346-76.0PH.
Nager, Lois: *See*—
Heyman, Eleanor; and Nager, Lois, 4,622,698, Cl. 2-49.00R.
Nagy, Jozsef: *See*—
Grega nee Toth, Erzsebet; Nagy, Jozsef; Tarpai, Gyula; Lorik, Erno ; Toth, Istvan; Pasztor, Karoly; Bartfai nee Harsanyi, Zsuzsanna; Beres, Ilona; Tasi, Laszlo ; Urszin nee Simon, Eszter; Dombay, Zsolt; Bajusz nee Olah, Judit; and Balogh, Karoly, 4,623,383, Cl. 71-100.000.
Naimer, Hubert L. Computer-controlled switching apparatus. 4,623,967, Cl. 364-483.000.
Naito, Kazufumi; and Utsunomiya, Mitito, to Kabushiki Kaisha Ishida Koki Seisakusho. Load sensor using a piezoelectric S.A.W. device. 4,623,813, Cl. 310-313.00R.
Nakachian, Raymond J.: *See*—
Smeyers, Pierre A., 4,623,094, Cl. 239-109.000.
Nakahara, Yutaka: *See*—
Minagawa, Motonobu; Nakahara, Yutaka; Shibata, Toshihiro; and Arata, Ryozo, 4,623,685, Cl. 524-99.000.
Nakai, Miyoji: *See*—
Waki, Eiichi; Kobayashi, Shigeo; Hashimoto, Yutaka; and Nakai, Miyoji, 4,623,598, Cl. 429-162.000.
Nakamura, Masahiro, to Ohtake Works Company, Ltd. Analog-digital conversion circuit apparatus connectable to a microcomputer for measuring electric voltage and current of a vibrator of an ultrasonic wave oscillator. 4,623,838, Cl. 324-142.000.
Nakamura, Masaki: *See*—
Koshizuka, Kunihiro; Abe, Takao; Kitamura, Shigehiro; Nakamura, Masaki; Hotta, Yuji; and Ishii, Fumio, 4,623,580, Cl. 428-216.000.
Nakamura, Satoshi; Hijiya, Hiromi; and Miyake, Toshio, to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo. Gradually disintegrable molded article. 4,623,394, Cl. 106-122.000.
Nakamura, Shigehira: *See*—
Irimajiri, Shoichiro; Kosuge, Yutaka; and Nakamura, Shigehira, 4,623,870, Cl. 340-52.00F.
Nakamura, Tatsuo, to TDK Corporation. Releasable fastening construction. 4,622,726, Cl. 24-590.000.
Nakamura, Tooru, to Shinko Electric Co., Ltd. Linear pulse motor. 4,623,807, Cl. 310-12.000.
Nakamura, Toshiyuki; Sugihara, Masahiro; Inaba, Tsutomu; and Kimura, Tadashi, to Mitsubishi Denki Kabushiki Kaisha. Scroll compressor with bearing lubrication means. 4,623,306, Cl. 418-55.000.
Nakane, Hiroshi: *See*—
Nabeshima, Daiki; and Nakane, Hiroshi, 4,623,994, Cl. 369-44.000.
Nakanihon System Co., Ltd.: *See*—
Kimura, Jiro, 4,622,907, Cl. 112-121.120.
Nakanishi, Tosaku: *See*—
Morimoto, Masafumi; Yoshida, Kunio; and Nakanishi, Tosaku, 4,623,985, Cl. 364-900.000.
Nakanishi, Toshihide; Azuma, Tomoki; Hirao, Toshihiko; Hattori, Kiyoji; and Sakurai, Minoru, to Kyowa Hakko Kogyo Co., Ltd. Process for producing L-lysine by fermentation. 4,623,623, Cl. 435-115.000.
Nakano, Masahide: *See*—
Hayatsu, Hikoya; Nakano, Masahide; and Matsuo, Yoshikazu, 4,623,638, Cl. 502-401.000.
Nakayama, Tadashi: *See*—
Suga, Yozo; Matsumoto, Fumio; and Nakayama, Tadashi, 4,623,406, Cl. 148-111.000.
Suga, Yozo; Konno, Toyohiko; and Nakayama, Tadashi, 4,623,407, Cl. 148-111.000.
Nakayama, Yoshio: *See*—
Fuma, Toyoji; Nishikawa, Kazuyuki; Makiguchi, Naoshi; Nagano, Katsuya; Nakayama, Yoshio; and Sasaki, Hiroyuki, 4,623,499, Cl. 264-83.000.
Nambudiri, Easwaran C. N.: *See*—
Soderberg, John H.; Jones, Howell A.; Eckert, Alton B.; Duwel, Edward C.; and Nambudiri, Easwaran C. N., 4,623,987, Cl. 364-900.000.
Namekawa, Kouroku; Koyano, Akira; and Kasai, Chihiro, to Aloka Co., Ltd. Ultrasonic diagnostic apparatus. 4,622,977, Cl. 128-663.000.
Nanba, Masaharu: *See*—
Iijima, Toshiyuki; Kina, Hedeki; and Nanba, Masaharu, 4,623,243, Cl. 355-15.000.
Napierski, Reinhard. Cutting device for crested cutting of fruits and the like. 4,622,876, Cl. 83-618.000.
Narayan, Sankar B.: *See*—
Alexander, Jerry L.; Narayan, Sankar B.; Gerfast, Sten R.; and Nelson, Charles E., 4,623,570, Cl. 428-65.000.
Narishige, Shinji: *See*—
Mitsuoka, Katsuya; Narishige, Shinji; Kumagai, Akira; Sano, Masaaki; Hara, Shinichi; and Hanazono, Masanobu, 4,623,439, Cl. 204-192.200.
Nashua Corporation: *See*—
Buchan, William R.; Faucher, Jerome R.; and Cosby, John M., 4,623,241, Cl. 355-10.000.
Natarajan, Sesha I.; and Gordon, Eric M., to E. R. Squibb & Sons, Inc. Acylalkylaminocarbonyl substituted amino and imino acid compounds. 4,623,729, Cl. 546-256.000.
National Institute For Researches In Inorganic Materials: *See*—
Uchida, Kenji; and Bannai, Eisuke, 4,623,424, Cl. 156-610.000.
National Research Development Corporation: *See*—
Church, Jonathan C. M., 4,623,351, Cl. 623-22.000.
Reed, Colin M., 4,622,762, Cl. 34-155.000.
National Starch and Chemical Corporation: *See*—
Flanagan, Thomas P., 4,623,688, Cl. 524-377.000.
Nauchno-Issledovatelsky Institut Prikladnoi Matematiki Pri Tomskom Gosudarstvennov Universitete: *See*—
Maximov, Jury M.; Ziatdinov, Mansur K.; Kolmakov, Anatoly D.; Raskolenko, Larisa G.; Merzhanov, Alexandr G.; Borovinskaya, Inna P.; and Dubovitsky, Fedor I., 4,623,402, Cl. 148-20.300.
Nayar, Bala C.; Baier, Kathleen G.; O'Brien, David A.; and Sawicki, Edward M., to Procter & Gamble Company, The. Stable suspension of pigments in aqueous hypochlorite bleach compositions. 4,623,476, Cl. 252-94.000.
NCR Corporation: *See*—
Hain, David A.; and Walker, Ian J., 4,623,081, Cl. 225-105.000.
Konen, Noel R., 4,623,883, Cl. 340-825.010.
Neapco, Inc.: *See*—
Diffenderfer, Harold R.; and Rowley, George S., 4,622,840, Cl. 72-283.000.
Nebgen, John W.; and Hinshaw, Gary D., to Columbia Gas System Service Corporation. Backfill for magnesium anodes. 4,623,435, Cl. 204-148.000.
NEC Corporation: *See*—
Kuraishi, Yoshiaki, 4,623,854, Cl. 333-173.000.
Watanabe, Takaya; and Kitano, Toshihiko, 4,623,853, Cl. 333-151.000.
Nelson, Charles E.: *See*—
Alexander, Jerry L.; Narayan, Sankar B.; Gerfast, Sten R.; and Nelson, Charles E., 4,623,570, Cl. 428-65.000.
Nelson, Donald D., to Sanborn Manufacturing Company, Inc. Pressure gauge and regulator. 4,622,857, Cl. 73-744.000.
Nelson, James A.; and Zimmer, Robert E., to Buehler Ltd. Method of mounting a plurality of coupons in molded material and polishing surfaces thereof for cross-sectional analysis of printed circuit boards. 4,623,500, Cl. 264-162.000.
Nelson, Mark W.: *See*—
Vensko, George; Carlin, Lawrence; Nelson, Mark W.; and Smith, A. Richard, 4,624,008, Cl. 381-43.000.
Nerup, Jorn: *See*—
Owerbach, David; and Nerup, Jorn, 4,623,619, Cl. 435-6.000.
Nesheim, David A. Reflex stimulator. 4,622,956, Cl. 128-57.000.
Nestlen, Wolfgang; and Reger, Arno, to Hengstler GmbH Geschaftsbereich Haller-Relais. Polarized electromagnetic relay with angled yoke arrangement. 4,623,863, Cl. 335-230.000.
Neuendorf, Hans-Christoph: *See*—
Eckhardt, Rudolf; Neuendorf, Hans-Christoph; and Freilingsdorf, Horst, 4,623,287, Cl. 408-206.000.
Nevins, Norman; and Gustafson, Thomas L., to Magic Seal Corporation. Summer blend caulking composition. 4,623,677, Cl. 523-122.000.
Nichols, Randy P., to Cactus Wellhead Equipment Co., Inc. Communication joint for use in a well. 4,623,020, Cl. 166-88.000.
Nicholson, John P.; and Pressley, Douglas W. Method of determining cathodic corrosion and displaying. 4,623,434, Cl. 204-1.00T.
Nicholson, Richard R.; and Gerber, Arthur H., to Sandoz Ltd. Cement mixes and admixtures thereof. 4,623,682, Cl. 524-3.000.
Niebylski, Leonard M.: *See*—
Zaweski, Edward F.; and Niebylski, Leonard M., 4,623,360, Cl. 44-57.000.
Zaweski, Edward F.; and Niebylski, Leonard M., 4,623,361, Cl. 44-57.000.
Zaweski, Edward F.; and Niebylski, Leonard M., 4,623,362, Cl. 44-57.000.
Zaweski, Edward F.; and Niebylski, Leonard M., 4,623,363, Cl. 44-57.000.
Nielsen, Per G., to V. Kann Rasmussen Holding A/S. Composite window for attic apartments. 4,622,786, Cl. 52-58.000.
Niemeyer, Ulf: *See*—
Scheffler, Gerhard; Niemeyer, Ulf; Brock, Norbert; and Pohl, Jorg, 4,623,742, Cl. 558-81.000.
Niese, Manfred, to Bayer Aktiengesellschaft. Structured design and decentralized control of production installations. 4,623,968, Cl. 364-500.000.

Nihon Sekiso Kogyo Co., Ltd.: *See*—
Fuma, Toyoji; Nishikawa, Kazuyuki; Makiguchi, Naoshi; Nagano, Katsuya; Nakayama, Yoshio; and Sasaki, Hiroyuki, 4,623,499, Cl. 264-83.000.
Nihon Tokushu Noyaku Seizo K.K.: *See*—
Kurahashi, Yoshio; Shiokawa, Kozo; Goto, Toshio; Kagabu, Shinzo; Kamochi, Atsumi; Moriya, Koichi; and Hayakawa, Hidenori, 4,623,377, Cl. 71-92.000.
Nikken Industries Corp.: *See*—
Itoh, Shunichi, 4,623,039, Cl. 185-39.000.
Nimura, Tsutomu: *See*—
Sato, Joichi; Shiono, Ryuji; Nimura, Tsutomu; Isogawa, Toshiaki; and Sato, Mitsuru, 4,623,933, Cl. 358-228.000.
Ninomiya, Tooru: *See*—
Kondo, Kaneichi; and Ninomiya, Tooru, 4,623,814, Cl. 310-339.000.
Nippon Kogaku K. K.: *See*—
Hoshino, Kunihisa, 4,623,927, Cl. 358-213.000.
Nippon Kokan Kabushiki Kaisha: *See*—
Handa, Masao; Ueki, Mikio; Tokuya, Tomohiko; Hori, Mitsuaki; Yasuoka, Hidenori; Sato, Toshio; Ichihara, Takuzo; and Toyama, Kenichi, 4,623,173, Cl. 285-333.000.
Nippon Sheet Glass Co., Ltd.: *See*—
Hasegawa, Jun; and Ueda, Makoto, 4,623,582, Cl. 428-220.000.
Nippon Shokubai Kagaku Kogyo Co., Ltd.: *See*—
Kita, Yuichi; Sakamoto, Kentaro; Baba, Masao; and Okubo, Atsushi, 4,623,734, Cl. 548-545.000.
Nippon Soken, Inc.: *See*—
Tanaka, Hiroaki; and Akita, Shigeyuki, 4,623,889, Cl. 340-870.370.
Nippon Steel Corporation: *See*—
Suga, Yozo; Matsumoto, Fumio; and Nakayama, Tadashi, 4,623,406, Cl. 148-111.000.
Suga, Yozo; Konno, Toyohiko; and Nakayama, Tadashi, 4,623,407, Cl. 148-111.000.
Nippondenso Co., Ltd.: *See*—
Fujiwara, Kenichi; Hasada, Eiichi; and Sugi, Hikaru, 4,622,828, Cl. 62-200.000.
Itoh, Hiroshi; Ohmi, Shinya; Suzuki, Yasutoshi; Fukada, Tsuyoshi; and Hara, Kunihiko, 4,623,222, Cl. 350-331.00T.
Nisenson, Jules: *See*—
Rude, Edward T.; Nisenson, Jules; and Waine, Martin, 4,623,012, Cl. 160-243.000.
Nishijima, Toyoki: *See*—
Takada, Shun; Kadowaki, Takashi; Sasaki, Masao; Nishijima, Toyoki; and Onodera, Kaoru, 4,623,616, Cl. 430-545.000.
Nishikawa, Kazuyuki: *See*—
Fuma, Toyoji; Nishikawa, Kazuyuki; Makiguchi, Naoshi; Nagano, Katsuya; Nakayama, Yoshio; and Sasaki, Hiroyuki, 4,623,499, Cl. 264-83.000.
Nishikawa, Masaji, to Shibazaki Seisakusho Ltd. Closure cap. 4,623,070, Cl. 215-329.000.
Nishikawa, Masao, to Honda Giken Kogyo K.K. Control device for a direct-coupling hydraulic clutch in a hydraulic torque converter. 4,623,053, Cl. 192-0.033.
Nishikawa, Mitsuyo: *See*—
Miyagaki, Hisanori; Higashi, Toshihiko; Yokogawa, Atsushi; Shimada, Yoshihiro; Kurihara, Nobuo; Nishikawa, Mitsuyo; Sato, Yoshio; Watanabe, Atsumi; and Morooka, Yasuo, 4,622,922, Cl. 122-449.000.
Nishikawa, Toshihiro; and Tanemura, Hatsumi, to Fuji Photo Film Co., Ltd. Method of developing silver halide photographic light-sensitive materials. 4,623,612, Cl. 430-375.000.
Nishikawa, Toshio; Ishikawa, Youhei; Wada, Hidekazu; and Takehara, Koichi, to Murata Manufacturing Co., Ltd. Dielectric resonator device. 4,623,857, Cl. 333-219.000.
Nishimura, Akira; Yoshii, Masami; and Yasui, Shigeharu, to Yanmar Diesel Engine Co., Ltd. Encased engine generator. 4,622,923, Cl. 123-2.000.
Nishimura, Youji: *See*—
Hamano, Isao; Morishita, Akira; Akae, Yoshifumi; Nishimura, Youji; Tanaka, Toshinori; and Yabunaka, Kiyoshi, 4,622,930, Cl. 123-179.00K.
Nishino, Takaichi, to Tachikawa Spring Co. Ltd. Seat frame for vehicle seat. 4,623,114, Cl. 248-415.000.
Nishioka, Tetsuji; and Oshiage, Katsunori, to Nissan Motor Co., Ltd. Method of controlling ratio change in continuously variable transmission. 4,622,867, Cl. 74-866.000.
Nishizawa, Jun-ichi; and Tamamushi, Takashige, to Nishizawa, Jun-ichi. Semiconductor photodetector. 4,623,909, Cl. 357-30.000.
Nishizawa, Kazunori: *See*—
Ito, Osamu; Mizutani, Hiroshi; and Nishizawa, Kazunori, 4,623,342, Cl. 604-385.00A.
Nissan Motor Company, Limited: *See*—
Chujo, Satoru; and Mitamura, Kenichi, 4,622,754, Cl. 33-356.000.
Kubozuka, Takao, 4,622,925, Cl. 123-41.250.
Nishioka, Tetsuji; and Oshiage, Katsunori, 4,622,867, Cl. 74-866.000.
Nissin Electric Co., Ltd.: *See*—
Suzuki, Yasuo; and Ando, Yasunori, 4,622,919, Cl. 118-718.000.
Nitschke, Werner: *See*—
Denz, Helmut; Etzold, Peter; Groschel, Wolfgang; Kaiser, Gunther; Kraemer, Heinz; Nitschke, Werner; and Zechnall, Martin, 4,623,974, Cl. 364-551.000.
Nitta, Tsuneo: *See*—
Watanabe, Sadakazu; Shinoda, Hidenori; Nitta, Tsuneo; Takebayashi, Yoichi; Hirai, Shouichi; Sakata, Tomio; Uehara, Kensuke; Takahashi, Yasuo; and Asada, Haruo, 4,624,011, Cl. 381-43.000.
Nitto Electric Industrial Co., Ltd.: *See*—
Noda, Yuzuru; and Imai, Masanori, 4,623,563, Cl. 427-379.000.
Nitto Hogei Co., Ltd: *See*—
Takao, Masayasu, 4,623,488, Cl. 260-410.700.
Niwa, Toshio; Himeno, Kiyoshi; and Hihara, Toshio, to Mitsubishi Chemical Industries Limited. Disazo dyestuffs having a monofluorotriazinyl group. 4,623,719, Cl. 534-636.000.
Nixon, Ralph D., to English Electric Valve Company Limited. Fluorescent display arrangement having field electrode adjacent cathode. 4,623,882, Cl. 340-760.000.
Noda, Yuzuru; and Imai, Masanori, to Nitto Electric Industrial Co., Ltd. Process for producing polyimide/metallic foil composite film. 4,623,563, Cl. 427-379.000.
Noguchi, Akio, to Fuji Xerox Co., Ltd. Color image data processing device featuring ghost elimination. 4,623,917, Cl. 358-80.000.
Nogueira, Lauro A. Folding knife with locking device. 4,622,744, Cl. 30-155.000.
NOK Corporation: *See*—
Nagasawa, Shinji, 4,623,153, Cl. 277-153.000.
Nomura, Hideo: *See*—
Osada, Yutaka; Sakakibara, Susumu; and Nomura, Hideo, 4,623,943, Cl. 360-78.000.
Nonaka, Shingo: *See*—
Toda, Masumi; Mori, Masashi; Nonaka, Shingo; Kyoden, Hiroshi; Ichikawa, Kenji; and Hamazaki, Yoshihisa, 4,623,393, Cl. 106-38.220.
Norbisrath, Max: *See*—
Grebe, Reiner; Norbisrath, Max; and Schmidt, Karl-Heinz, 4,623,096, Cl. 241-30.000.
Nordica S.p.A.: *See*—
Baratto, Mirko; and Leonardi, Alfio, 4,622,765, Cl. 36-120.000.
Nordisk Insulinlaboratorium: *See*—
Owerbach, David; and Nerup, Jorn, 4,623,619, Cl. 435-6.000.
Norman, Geoffrey B., to Denis Ferranti Meters, Ltd. Valve and coupling assemblies. 4,622,990, Cl. 137-315.000.
North American Philips Corporation: *See*—
Melchior, Robert A., 4,623,322, Cl. 464-160.000.
Tremblay, Bruce R., 4,623,100, Cl. 242-25.00R.
Northern Telecom Limited: *See*—
Bumgardner, Donald L., 4,622,725, Cl. 24-453.000.
Dubreuil, Luc T.; Pouliot, Gaston D.; Cote, Gerard G.; Larouche, Rejean; and Zuber, Bretislav P., 4,622,741, Cl. 29-858.000.
Northwestern University: *See*—
Childress, Dudley; and Strysik, John, 4,623,354, Cl. 623-25.000.
Norton Company: *See*—
Cottringer, Thomas E.; van de Merwe, Ronald H.; and Bauer, Ralph, 4,623,364, Cl. 51-309.000.
Norton, Mark L.: *See*—
Getz, Marion E.; Harris, Christopher J.; McConnell, Philip J.; Norton, Mark L.; Garrett, John P.; and Harding, Angela I., 4,623,964, Cl. 364-401.000.
Nose, Masateru: *See*—
Masumoto, Tsuyoshi; Esashi, Kiyoyuki; and Nose, Masateru, 4,623,387, Cl. 420-41.000.
Novus Inc.: *See*—
Tingley, Eddie S., 4,622,780, Cl. 51-170.00T.
Nowak, Manfred: *See*—
Juraschek, Peter; and Nowak, Manfred, 4,623,188, Cl. 296-97.00G.
Nozaki, Shinya; Yamada, Keiichi; and Kushida, Takeo, to Diesel Kiki Co., Ltd. Fuel injection apparatus for internal combustion engines. 4,622,942, Cl. 123-446.000.
NSK-Warner K.K.: *See*—
Yokote, Yoshihiro, 4,623,168, Cl. 280-804.000.
Nucefora, William A.: *See*—
Nuwayser, Elie S.; and Nucefora, William A., 4,623,588, Cl. 428-402.240.
Nunes, Maurice: *See*—
Hurley, James R.; Birkner, Joseph R.; and Nunes, Maurice, 4,622,946, Cl. 126-39.00E.
Nussbaumer, Manfred; and van Lith, Theo, to Ed. Zublin Aktiengesellschaft. Method for reducing compressed air losses when driving underground cavities supported by compressed air. 4,623,198, Cl. 299-10.000.
Nuwayser, Elie S.; and Nucefora, William A., to Biotek, Inc. Controlled release composite core coated microparticles. 4,623,588, Cl. 428-402.240.
N.V. Bekaert S.A.: *See*—
Verbauwhede, Germain; and Vanassche, Roger, 4,623,281, Cl. 405-19.000.
Nyman, Phillip A., Jr., to TRW Inc. High speed analog/digital driver. 4,623,799, Cl. 307-260.000.
Nysen, Paul A., to X-Cyte Inc. Apparatus for compensating non-linearities in frequency-modulated signal. 4,623,890, Cl. 342-44.000.
Nystuen, Arne M.; and Kuss, John M., to Whirlpool Corporation. Motor-fan assembly for vacuum cleaner. 4,623,811, Cl. 310-192.000.
O-M Limited: *See*—
Mori, Yoshinobu; and Tada, Akira, 4,623,325, Cl. 493-468.000.
O-Two Systems International Inc.: *See*—
Flynn, Stephen D., 4,622,964, Cl. 128-205.240.
Oberst, E. Ernest. Tide timer. 4,623,259, Cl. 368-19.000.

O'Brien, David A.: *See*—
Nayar, Bala C.; Baier, Kathleen G.; O'Brien, David A.; and Sawicki, Edward M., 4,623,476, Cl. 252-94.000.
Occidental Chemical Corporation: *See*—
Ying, Wei-chi; and Sojka, Stanley A., 4,623,464, Cl. 210-616.000.
Occidental Oil Shale, Inc.: *See*—
Che, Stanley C.; and Madgavkar, Ajay, 4,623,444, Cl. 208-92.000.
Oce-Nederland B.V.: *See*—
Bakker, Martin; and Van Laarhoven, Johannes A. H., 4,623,602, Cl. 430-106.000.
Oceanside Electronics: *See*—
Bambauer, Boyd R.; Dunkle, Donald H.; and Loscutoff, Steve, 4,623,029, Cl. 177-137.000.
O'Connell, John P.; and Wozniak, John F., to Moreco Energy, Inc. Removing halogenated polyphenyl materials from used oil products. 4,623,448, Cl. 208-262.000.
Oda, Noriyuki; Kido, Nobuyuki; and Muramatsu, Keiji, to Asahi Glass Company Ltd. Joint structure for a tube and a header. 4,623,017, Cl. 165-82.000.
Oda, Yasuhiro: *See*—
Shintani, Takashi; Emura, Noriaki; Tanaka, Tetsuo; and Oda, Yasuhiro, 4,623,689, Cl. 524-457.000.
Oerlikon-Boehringer GmbH: *See*—
Rohs, Hans-Gunther, 4,623,157, Cl. 279-123.000.
Oetiker, Hans. Fastening arrangement for open hose clamp. 4,622,720, Cl. 24-20.0TT.
Office National d'Etudes et de Recherches Aerospatiales (par abreviation O.N.E.R.A.): *See*—
Boudigues, Serge, 4,622,816, Cl. 60-606.000.
Ogawa, Keiichi: *See*—
Karamon, Hideaki; and Ogawa, Keiichi, 4,623,408, Cl. 148-403.000.
Ogawa, Tetsuya; Goto, Yasuyuki; Kitano, Kisei; and Yoshida, Naoyuki, to Chisso Corporation. Ester compounds having a pyrimidine ring. 4,623,477, Cl. 252-299.500.
Ogden Electronics Ltd.: *See*—
Steel, James, 4,623,199, Cl. 303-6.00R.
Oh, Chang H., to J & L Importers, Inc. Cookware having integrally formed natural stone bottoms and method of manufacturing the same. 4,622,948, Cl. 126-390.000.
Oh, Indong. Protrusio cup. 4,623,352, Cl. 623-23.000.
O'Hare, Thomas E.: *See*—
Sapienza, Richard S.; Slegeir, William A.; O'Hare, Thomas E.; and Mahajan, Devinder, 4,623,634, Cl. 502-113.000.
Ohashi, Kenji; and Uehara, Masao, to Murata Kikai Kabushi Kaisha. Fly removing system in textile machine. 4,622,713, Cl. 15-312.00R.
Ohkubo, Masahiro, to Kabushiki Kaisha Daikin Seisakusho. Hydraulic clutch. 4,623,055, Cl. 192-85.0AA.
Ohloff, Gunther: *See*—
Schulte-Elte, Karl-Heinrich; Ohloff, Gunther; Muller, Bernard L.; and Giersch, Wolfgang K., 4,623,750, Cl. 568-822.000.
Ohmi, Shinya: *See*—
Itoh, Hiroshi; Ohmi, Shinya; Suzuki, Yasutoshi; Fukada, Tsuyoshi; and Hara, Kunihiko, 4,623,222, Cl. 350-331.00T.
Ohnishi, Katsumi: *See*—
Matsumoto, Toshio; Kato, Motokazu; Sato, Kiyosumi; Mizushima, Yoshihiro; and Ohnishi, Katsumi, 4,623,962, Cl. 364-200.000.
Ohno, Akio: *See*—
Tanaka, Kiyoharu; Ohno, Akio; Murayama, Yasushi; Hoshino, Osamu; and Takada, Yusaku, 4,622,916, Cl. 118-688.000.
Ohno, Shigeru: *See*—
Motoyama, Shimesu; Kurita, Kaoru; Sakashita, Shizuka; Takei, Narimichi; and Ohno, Shigeru, 4,623,098, Cl. 241-46.040.
Ohsaki, Ryouhei, to Oki Electric Industry Co., Ltd. Ink ribbon cartridge. 4,623,274, Cl. 400-208.000.
Ohta, Ryuji; and Kobayashi, Michio, to Jidosha Kiki Co., Ltd. Brake apparatus. 4,623,044, Cl. 188-72.100.
Ohtake Works Company, Ltd.: *See*—
Nakamura, Masahiro, 4,623,838, Cl. 324-142.000.
Ohtsuka, Shuichi; and Kimura, Akinori, to Fuji Photo Film Co., Ltd. Developing head of electrophotographic system. 4,622,915, Cl. 118-652.000.
Ohtsuka, Shuichi: *See*—
Kimura, Akinori; and Ohtsuka, Shuichi, 4,623,240, Cl. 355-10.000.
Oil-Dri Corporation of America: *See*—
Goss, George R., 4,622,920, Cl. 119-1.000.
Okabayashi, Tadashi: *See*—
Kono, Masao; Komeno, Taichitro; Ishihara, Shoichi; Yamauchi, Akira; and Okabayashi, Tadashi, 4,623,485, Cl. 540-92.000.
Okada, Tomoo, to Kabushiki Kaisha Saginomiya Seisakusho. Refrigerating cycle. 4,622,829, Cl. 62-216.000.
Okami, Takehide: *See*—
Inoue, Yoshio; Okami, Takehide; Yokoo, Koji; and Kinami, Hitoshi, 4,623,693, Cl. 524-700.000.
Okauchi, Shuki: *See*—
Yamori, Tsunefumi; Okauchi, Shuki; and Fujioka, Hironari, 4,623,557, Cl. 427-44.000.
Oki Densen Kabushiki Kaisha: *See*—
Sasaki, Masao; Wada, Kazuo; and Tanuma, Jiro, 4,623,207, Cl. 339-17.0LM.
Oki Electric Industry Co., Ltd.: *See*—
Ohsaki, Ryouhei, 4,623,274, Cl. 400-208.000.
Sasaki, Masao; Wada, Kazuo; and Tanuma, Jiro, 4,623,207, Cl. 339-17.0LM.
Oki, Yasuo, to Orihiro Co. Ltd. Movement-regulating mechanism for a sealing device. 4,622,793, Cl. 53-373.000.
Oki, Yasuo, to Orihiro Co., Ltd. Sealing mechanism for a packing machine. 4,622,798, Cl. 53-373.000.
Okubo, Atsushi: *See*—
Kita, Yuichi; Sakamoto, Kentaro; Baba, Masao; and Okubo, Atsushi, 4,623,734, Cl. 548-545.000.
Okuda, Hiroshi, to Sumitomo Electric Industries, Ltd. Semiconductor light-emitting device. 4,623,907, Cl. 357-17.000.
Okunishi, Toshifumi: *See*—
Fukuda, Michio; Okunishi, Toshifumi; and Fudo, Eiji, 4,622,733, Cl. 29-564.400.
Okutani, Norio; Matsumura, Kenichi; and Inoue, Toshitsugu, to Matsushita Electric Industrial Co., Ltd. Position detecting apparatus. 4,623,253, Cl. 356-375.000.
Old Western Paints, Inc.: *See*—
Delmonico, John A., 4,623,390, Cl. 106-15.050.
Olechowski, Jerome R.: *See*—
Hayes, Kathryn S.; and Olechowski, Jerome R., 4,623,747, Cl. 560-190.000.
Olesen, Paul, to Swingline Inc. Hand-held stapler. 4,623,084, Cl. 227-153.000.
Oliver, Bruce J. Third faucet system with above sink purity indicator. 4,623,451, Cl. 210-87.000.
Olmstead, H. Wayne: *See*—
Wahlquist, Clayton C.; and Olmstead, H. Wayne, 4,623,825, Cl. 315-368.000.
Olschewski, Armin; Bauer, Bernhard; Leuner, Hilmar; and Dobhan, Herbert, to SKF GmbH. Pocket cage for rolling bearing. 4,623,270, Cl. 384-576.000.
Olson, Lorimer. Support for a beverage container. 4,623,112, Cl. 248-153.000.
Olsson, Sven-Gunnar: *See*—
Cewers, Goran; and Olsson, Sven-Gunnar, 4,623,331, Cl. 604-65.000.
Olympus Optical Co., Ltd.: *See*—
Fujii, Tooru, 4,623,226, Cl. 350-427.000.
Omoto, Yorihiko: *See*—
Yamamoto, Ryuzo; Mori, Kihei; Omoto, Yorihiko; Iai, Hidehito; and Kikuchi, Toru, 4,623,571, Cl. 428-68.000.
Oneac Corporation: *See*—
Klingbiel, August G.; and McCartney, Thomas, 4,623,834, Cl. 323-258.000.
Onishi, Koichi; and Suganuma, Takashi, to Doryokuro Kakunenryo Kaihatsu Jigyodan. DC plasma jet generator for emission spectrochemical analysis. 4,623,250, Cl. 356-316.000.
Onizuka, Masahiro, to Mitsubishi Denki Kabushiki Kaisha. Electrospark machining solution. 4,623,773, Cl. 219-69.00D.
Onodera, Kaoru: *See*—
Takada, Shun; Kadowaki, Takashi; Sasaki, Masao; Nishijima, Toyoki; and Onodera, Kaoru, 4,623,616, Cl. 430-545.000.
Oppenheim, Michael J.: *See*—
Zaruba, John V.; Meyer, Burton C.; Lindsay, Robert L.; and Oppenheim, Michael J., 4,623,319, Cl. 446-373.000.
Orain, Michel A., to Glaenzer Spicer. Universal coupling for transmitting a movement of rotation and a torque between two shafts operating at a large angle. 4,623,321, Cl. 464-7.000.
Orbach, Zvi, to Honeywell Inc. Real-time video image enhancement system. 4,623,923, Cl. 358-166.000.
Organ-Fager Technology, N.V.: *See*—
Frei, Josef; Schweri, Hans; and Schnorf, Rudolf, 4,623,515, Cl. 422-1.000.
Organon Teknika b.v.: *See*—
Maaskant, Nico; Bantjes, Adriaan; and Kempen, Hermanus J. M., 4,623,628, Cl. 436-13.000.
Orihiro Co. Ltd.: *See*—
Oki, Yasuo, 4,622,793, Cl. 53-373.000.
Oki, Yasuo, 4,622,798, Cl. 53-373.000.
Orlowski, Alex W.: *See*—
Linton, Robert W.; and Orlowski, Alex W., 4,623,585, Cl. 428-312.800.
Osada, Yutaka; Sakakibara, Susumu; and Nomura, Hideo, to Victor Company of Japan, Ltd. Head positioning apparatus using a DC motor. 4,623,943, Cl. 360-78.000.
Oscobal AG: *See*—
Ries, Peter; Baumgart, Frank; and Mittelmeier, Heinz, 4,623,553, Cl. 427-2.000.
Oshiage, Katsunori: *See*—
Nishioka, Tetsuji; and Oshiage, Katsunori, 4,622,867, Cl. 74-866.000.
Oshima, Hiroyuki; Kodaira, Toshimoto; and Mano, Toshihiko, to Seiko Epson Kabushiki Kaisha. Thin film transistors. 4,623,908, Cl. 357-23.700.
Oshima, Mitsuaki; Izaki, Masataka; Kajino, Jirou; Igarashi, Yoshiaki; and Mitani, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Camera apparatus. 4,623,930, Cl. 358-222.000.
Oshima, Shigeru: *See*—
Wong, Wan C.; and Oshima, Shigeru, 4,623,232, Cl. 354-173.100.
Oslo Controls, Inc.: *See*—
Krause, W. Barry, 4,623,763, Cl. 200-11.00K.
Ostermann Apparatebau Kiel GmbH: *See*—
Ostermann, Georg C., 4,623,959, Cl. 362-293.000.
Ostermann, Georg C., to Ostermann Apparatebau Kiel GmbH. Apparatus, particularly for transloading vehicles for providing a field of view for carrying out work during darkness, particularly at military field transloading posts. 4,623,959, Cl. 362-293.000.
O'Sullivan, James P., to Sperry Limited. Collision avoidance apparatus. 4,623,966, Cl. 364-461.000.

Otaki, Yukio: *See*—
Kikuzawa, Kenji; and Otaki, Yukio, 4,623,290, Cl. 411-350.000.
Otani, Kichiro: *See*—
Motegi, Kiyoshi; and Otani, Kichiro, 4,623,543, Cl. 426-103.000.
Otis Elevator Company: *See*—
Horbrugger, Karl; and Schlotter, Jurgen, 4,623,041, Cl. 187-29.00R.
Meguerdichian, Gary M., 4,623,983, Cl. 364-900.000.
Otis Elevator Corporation: *See*—
Hall, Robert E.; and Whynacht, Charles, 4,623,040, Cl. 187-29.00R.
Ottinger, Barbara L.: *See*—
Brown, John M.; Herritz, Donald W.; Ottinger, Barbara L.; and Westmas, Laland D., 4,623,068, Cl. 215-11.00R.
Ou-Yang, David T., to Minnesota Mining and Manufacturing Company. Printing ink. 4,623,392, Cl. 106-27.000.
Outboard Marine Corporation: *See*—
Ferguson, Arthur R., 4,623,313, Cl. 440-77.000.
Wenstadt, Thomas D.; and Hagen, Marcus W., 4,622,938, Cl. 123-413.000.
Over, William R.: *See*—
Brown, Christopher K.; Kensinger, Lex D.; Klopp, Gregory S.; Long, Alden O., Jr.; Moyer, Carl L.; Over, William R.; and Walter, Herman D., 4,623,293, Cl. 414-126.000.
Overhoff Ges m.b.H.: *See*—
Pastorek, Konrad, 4,623,492, Cl. 261-92.000.
Overholt, Steven D.: *See*—
Bohme, Reinhard D.; and Overholt, Steven D., 4,623,412, Cl. 156-210.000.
Overman, Dana C.: *See*—
Dembicki, Dennis R.; Coan, Frederick L.; Glassford, Craig L.; and Overman, Dana C., 4,623,704, Cl. 526-68.000.
Ovshinsky, Stanford R.: *See*—
Sapru, Krishna; Reichman, Benjamin; Reger, Arie; and Ovshinsky, Stanford R., 4,623,597, Cl. 429-101.000.
Owen, Hartley: *See*—
Haddad, James H.; and Owen, Hartley, 4,623,446, Cl. 208-113.000.
Owens-Illinois, Inc.: *See*—
Swartzbaugh, Peter T., 4,623,077, Cl. 222-517.000.
Owerbach, David; and Nerup, Jorn, to Nordisk Insulinlaboratorium. Method for the determination of liability in human individuals to develop atherosclerosis. 4,623,619, Cl. 435-6.000.
Oy Tampella Ab: *See*—
Lehtinen, Jukka; and Sorma, Olli-Pekka, 4,622,758, Cl. 34-13.000.
Oyama, Kazuo, to Honda Giken Koygo Kabushiki Kaisha. Crankshaft structure of two-cycle internal combustion engine. 4,622,934, Cl. 123-197.0AC.
Ozyagcilar, Mehmet N.; and Davis, Milton W., Jr., to University of South Carolina. Catalysts for synthesis of ammonia. 4,623,532, Cl. 423-362.000.
P.A. Rentrop Hubert & Wagner Fahrzeugausstattungen GmbH & Co KG: *See*—
Lieker, Reiner, 4,623,193, Cl. 297-284.000.
P. D. George Company, The: *See*—
Mabrey, David W.; and Dye, James M., 4,623,696, Cl. 525-33.000.
Paddington, Arthur L., to Bridon P.L.C. Emergency release couplers. 4,622,997, Cl. 137-595.000.
Pagano, Anthony L. Pivotal fixture apparatus for fabricating board on board fence sections. 4,623,083, Cl. 227-152.000.
Pagels, Louis T.: *See*—
Weiler, Gerhard H.; Anderson, Paul A.; and Pagels, Louis T., 4,623,516, Cl. 422-28.000.
Palara, Sergio; and Torazzina, Aldo, to SGS-ATES Componenti Elettronici SpA. Protective device for a power element of an integrated circuit. 4,623,950, Cl. 361-79.000.
Palley, Igor: *See*—
Harpell, Gary A.; Kavesh, Sheldon; Palley, Igor; and Prevorsek, Dusan C., 4,623,574, Cl. 428-113.000.
Palmer, Eric M.: *See*—
Buchroeder, Richard A.; Palmer, Eric M.; and Sukhman, Yefim P., 4,623,776, Cl. 219-121.0LG.
Palosi, Eva: *See*—
Bernath, Gabor; Kobor, Jeno ; Folop, Ferenc; Sohar, Pal; Perjesi, Pal; Ezer, Elemer; Hajos, Gyorgy; Palosi, Eva; Denes, Laszlo ; and Szporny, Laszlo , 4,623,647, Cl. 514-228.000.
Paoletti, Sergio; and Leopardi, Francesco, to L.P. Italiana S.p.A. Apparatus for measuring the rate of erythrosedimentation of the blood. 4,622,847, Cl. 73-61.400.
Paoli, Thomas L.: *See*—
Streifer, William; Scifres, Donald R.; Burnham, Robert D.; and Paoli, Thomas L., 4,624,000, Cl. 372-45.000.
Paparizos, Christos; Shaw, Wilfrid G.; and Callahan, James L., to Standard Oil Company, The. Method for the preparation of high activity palladium based catalysts. 4,623,635, Cl. 502-215.000.
Pappas, Michael J.: *See*—
Buechel, Frederick F.; and Pappas, Michael J., 4,623,353, Cl. 623-23.000.
Paraskevakos, Theodore G., to Indoor Archery, Incorporated. Archery/practice exercise device and attachments therefor. 4,623,145, Cl. 272-135.000.
Pargeter, John K.: *See*—
MacDougall, John; and Pargeter, John K., 4,622,905, Cl. 110-347.000.
Park, Chung P., to Dow Chemical Company, The. Foams of ionically associated blends of styrenic and ethylenic polymers. 4,623,671, Cl. 521-92.000.
Park, James E.: *See*—
Urig, Elmer R.; and Park, James E., 4,623,462, Cl. 210-496.000.
Parker, Glenn: *See*—
Ackerman, Mark S.; and Parker, Glenn, 4,623,147, Cl. 273-1.00E.
Parrillo, Louis C.: *See*—
Chang, Chuan C.; Kahng, Dawon; Kamgar, Avid; and Parrillo, Louis C., 4,623,912, Cl. 357-54.000.
Parry, Keith P.; Rathmell, William G.; and Worthington, Paul A., to Imperial Chemical Industries PLC. Fungicidal triazole ethanol compounds. 4,623,654, Cl. 514-383.000.
Pastorek, Konrad, to Overhoff Ges m.b.H. Aerator for liquids. 4,623,492, Cl. 261-92.000.
Pastorino, Ronald L., to U.S. Peroxygen Company. Composition and method for making foamed polyester resin. 4,623,478, Cl. 252-350.000.
Pasztor, Karoly: *See*—
Grega nee Toth, Erzsebet; Nagy, Jozsef; Tarpai, Gyula; Lorik, Erno ; Toth, Istvan; Pasztor, Karoly; Bartfai nee Harsanyi, Zsuzsanna; Beres, Ilona; Tasi, Laszlo ; Urszin nee Simon, Eszter; Dombay, Zsolt; Bajusz nee Olah, Judit; and Balogh, Karoly, 4,623,383, Cl. 71-100.000.
Patent-Treuhand-Gesellschaft fur elektrische Gluhlampen mbH: *See*—
Krieg, Rudolf; Ziegler, Friedrich; and Bierbauer, Franz-Josef, 4,623,815, Cl. 313-113.000.
Patents Unlimited Ltd.: *See*—
Lindmayer, Istvan; and Menassa, Karim, 4,623,332, Cl. 604-68.000.
Patterson, Patricia L., to E-Systems, Inc. Look-up table encoder for linear block codes. 4,623,999, Cl. 371-37.000.
Patzschke, Hans-Peter; Gobel, Armin; and Bohmert, Reiner, to Herberts Gesellschaft mit beschraenkter Haftung. Cathodically precipitable aqueous electro-dipcoating agent. 4,623,690, Cl. 524-538.000.
Paulson, Ralph E. Smoke-free work area. 4,623,367, Cl. 55-385.00R.
Paulson, Robert T.; Sevitsky, Gary S.; and D'Agosto, Nicholas A., III, to Dictaphone Corporation. Apparatus for monitoring and displaying activity of an information processing system. 4,623,988, Cl. 364-900.000.
Paulsson, Jan-Erik H.; and Blixt, Lars-Goran F., to Blixt, Lars-Goran Franklin. Building structure, especially air raid shelter. 4,622,788, Cl. 52-79.110.
Pave-Mark Corporation: *See*—
Smith, Martin A., 4,623,279, Cl. 404-93.000.
Paynter, John: *See*—
Hoffman, Mary V.; and Paynter, John, 4,623,816, Cl. 313-487.000.
Pedicano, Ernest: *See*—
Pedicano, James J.; Kane, James G.; and Pedicano, Ernest, 4,623,336, Cl. 604-192.000.
Pedicano, James J.; Kane, James G.; and Pedicano, Ernest. Disposable safety needle sheath. 4,623,336, Cl. 604-192.000.
Pejouhy, Radi; Benner, Stephen J.; and Loring, Joshua, to Texas Instruments Incorporated. Method of providing an improved seal for thermostatic switch housings. 4,622,739, Cl. 29-622.000.
Peneder, Franz; and Suchanek, Vojen, to BBC Brown, Boveri & Company, Limited. Alternating-current machine drive. 4,623,830, Cl. 318-798.000.
Penn-Med Technology, Inc.: *See*—
Knopp, Arthur A.; Lieb, Nathaniel H.; and Alderman, Albert D., Jr., 4,623,795, Cl. 250-504.00H.
Pennella, Filippo: *See*—
Meier, Paul F.; and Pennella, Filippo, 4,623,669, Cl. 518-719.000.
Pennzoil Company: *See*—
Clampitt, Bert H.; Deysarkar, Asoke K.; and Westmoreland, Thomas D., Jr., 4,623,447, Cl. 208-187.000.
Pentith, Gerald R. O., to Continental Conveyor and Equipment Company, Inc. Belt conveyor arrangement. 4,623,061, Cl. 198-805.000.
Perchonock, Carl D., to SmithKline Beckman Corporation. Leukotriene antagonists. 4,623,535, Cl. 424-43.000.
Perjesi, Pal: *See*—
Bernath, Gabor; Kobor, Jeno ; Folop, Ferenc; Sohar, Pal; Perjesi, Pal; Ezer, Elemer; Hajos, Gyorgy; Palosi, Eva; Denes, Laszlo ; and Szporny, Laszlo , 4,623,647, Cl. 514-228.000.
Perrone, Ettore: *See*—
Alpegiani, Marco; Bedeschi, Angelo; Foglio, Maurizio; Franceschi, Giovanni; and Perrone, Ettore, 4,623,643, Cl. 514-196.000.
Personal Products Company: *See*—
Luceri, Thomas J., 4,623,340, Cl. 604-385.00R.
Persson, Peter, to Economedica Sweden AB. Instrument for the treatment of respiratory obstruction. 4,622,968, Cl. 128-305.300.
Pertzsch, Albert; Brunner, Hubert; and Zeroni, Ludwig, to Agfa Gevaert Aktiengesellschaft. Video cassette. 4,623,105, Cl. 242-198.000.
Perucca, Vincenzo: *See*—
Conta, Renato; Perucca, Vincenzo; and Rocchi, Remo, 4,623,904, Cl. 346-140.00R.
Pestka, Sidney, to Hoffmann-La Roche Inc. Immunoassay for peptide and protein oligomers. 4,623,621, Cl. 435-7.000.
Petcen, Donald H.: *See*—
Ezrielev, Robert I.; Kamen, Melvin E.; and Petcen, Donald H., 4,623,708, Cl. 526-314.000.
Peters, Edward N., to General Electric Company. Process for the preparation of N-alkylphthalimide and copolymer derived therefrom. 4,623,732, Cl. 548-480.000.
Peters, John W., to Hughes Aircraft Company. Low temperature process for depositing expitaxial layers. 4,623,426, Cl. 156-614.000.
Petersen, Robert B., to Hitco. Metal complex reaction product of furfurylamine and a metal carbonyl. 4,623,735, Cl. 549-206.000.
Petersen, Robert N. Dockside system for the collection and disposal of bilge water and waste oil. 4,623,452, Cl. 210-104.000.
Peterson, James R., to Jimco Products, Inc. Ventilation apparatus and methods of making and using same. 4,622,887, Cl. 98-66.100.

Petrashko, Alexei I.: *See*—
Ivanov, Mikhail G.; Golov, Veniamin G.; Kuzmin, Vladimir N.; Alyakrinskaya, Aida I.; Mushy, Roman Y.; Kovalev, Alexei D.; Shutova, Nadezhda V.; Rodionov, Jury A.; Molev, Igor I.; Yakovleva, Ljudmila S.; Berezin, Vitaly B.; Petrashko, Alexei I.; Shuev, Gennady M.; Bukin, Boris A.; Belkina, Tamara M., deceased; and Belkin, Naum S., administrator, 4,623,731, Cl. 548-374.000.

Petre, Mark L.; and Lock, Michael W., to Emhart Industries, Inc. Means electrically grounding a motor. 4,623,764, Cl. 200-38.00R.

Pettit, Frederick M. Perimeter fence for above-ground swimming pools. 4,623,126, Cl. 256-25.000.

Petursson, Sigurdur G. Mechanical waste mechanism. 4,622,701, Cl. 4-203.000.

Pexton, Harold W., to Magnetic Peripherals Inc. Damped static eliminator for disk drives. 4,623,952, Cl. 361-220.000.

Pfaff, Peter R., to Missry Associates, Inc. Hanging planter. 4,622,776, Cl. 47-67.000.

Pfitzner, Klaus: *See*—
Brunnmueller, Fritz; Kroner, Michael; Hartmann, Heinrich; Linhart, Friedrich; and Pfitzner, Klaus, 4,623,699, Cl. 525-355.000.

Pfizer Inc.: *See*—
Gilligan, Paul J.; McGuirk, Paul R.; and Witty, Michael J., 4,623,650, Cl. 514-312.000.
Kadin, Saul B.; and Sarges, Reinhard, 4,623,725, Cl. 544-346.000.
Lombardino, Joseph G., 4,623,486, Cl. 514-212.000.
Sarges, Reinhard, 4,623,728, Cl. 546-236.000.

Phenix Co., Ltd.: *See*—
Tajima, Kazuhiko, 4,622,697, Cl. 2-23.000.

Phillips, Grady H., to International Business Machines Corp. Device independent data transfer. 4,623,963, Cl. 364-300.000.

Phillips Petroleum Company: *See*—
Gravley, Mark L.; and Kertok, Mark E., 4,623,521, Cl. 422-156.000.
Meier, Paul F.; and Pennella, Filippo, 4,623,669, Cl. 518-719.000.
Washer, Stone P., 4,623,443, Cl. 208-67.000.

Photon Sources, Inc.: *See*—
Galan, Louis, 4,623,229, Cl. 350-623.000.

Piatt, Michael J.: *See*—
Brown, Mark E.; Gamble, Bruce W.; Piatt, Michael J.; and Vandagriff, Randy D., 4,623,897, Cl. 346-75.000.

Pies, Wolfgang: *See*—
Broecker, Franz J.; Duembgen, Gerd; Pies, Wolfgang; Schlichtharle, Gottfried; and Weber, Guenter, 4,623,668, Cl. 518-709.000.

Piesche, Gunter, to Ranco Incorporated. Pressure regulator. 4,622,815, Cl. 60-602.000.

Pike, Roscoe A., to United Technologies Corporation. Amorphous hydrated metal oxide primer for organic adhesively bonded joints. 4,623,591, Cl. 428-414.000.

Pillot, Bernard, to International Diffusion Consommateur. Body-supporting device for wheelchair for handicapped person comprising a structure allowing an upright position. 4,623,194, Cl. 297-316.000.

Pillsbury Company, The: *See*—
Swanson, Peter E., 4,622,890, Cl. 99-450.200.
Wallin, Glenn; Rosenwald, Diane; Citti, James; and Yong, Samuel, 4,623,542, Cl. 426-94.000.

Pioneer Electronic Corporation: *See*—
Kurosaki, Masanori; Aoyagi, Yoshio; Ueki, Yoshiharu; Kaneko, Yukihiro; Motohashi, Minoru; Sakaguchi, Shozaburo; and Sawaki, Manabu, 4,623,992, Cl. 369-6.000.

Pitcher, Arnold, to Crystalate Electronics Limited. Variable electrical resistance device. 4,623,868, Cl. 338-160.000.

Pitney Bowes Inc.: *See*—
Soderberg, John H.; Jones, Howell A.; Eckert, Alton B.; Duwel, Edward C.; and Nambudiri, Easwaran C. N., 4,623,987, Cl. 364-900.000.

Pittet, Alan O.; Muralidhara, Ranya; Miller, Kevin P.; and Luccarelli, Domenick, Jr., to International Flavors & Fragrances Inc. Flavoring with dithioethers of 2-phenyl-2-alkenals. 4,623,538, Cl. 424-52.000.

Pittet, Alan O.; Muralidhara, Ranya; Miller, Kevin P.; Luccarelli, Domenick, Jr.; and Vock, Manfred H., to International Flavors & Fragrances Inc. Flavoring with dialkylthioalkenes, dialkylthioalkylcycloalkenes and monoalkylthioalkenylcycloalkenes. 4,623,547, Cl. 426-535.000.

Pittsburgh Corning Corporation: *See*—
Linton, Robert W.; and Orlowski, Alex W., 4,623,585, Cl. 428-312.800.

Pittz, Eugene P.; and Smerbeck, Richard V., to Warner-Lambert Company. Non-steroidal anti-inflammatory compounds and compositions thereof. 4,623,663, Cl. 514-648.000.

Pivonka, Josef K., to Tweedy of Burnley Limited. Dough rolling method and apparatus with air-film lubricated chute. 4,623,545, Cl. 426-502.000.

Plan Hold Corporation: *See*—
Avella, Frank S., 4,623,195, Cl. 297-437.000.

Plettner, Horst: *See*—
Korner, Gerhard; Lutz, Edelwald; and Plettner, Horst, 4,623,134, Cl. 267-124.000.

Plummer, Mark A., to Marathon Oil Company. Sodium tetrachloroaluminate catalyzed process for the molecular weight reduction of liquid hydrocarbons. 4,623,445, Cl. 208-108.000.

Pohl, Jorg: *See*—
Scheffler, Gerhard; Niemeyer, Ulf; Brock, Norbert; and Pohl, Jorg, 4,623,742, Cl. 558-81.000.

Polaroid Corporation: *See*—
Hausslein, Robert W., 4,623,896, Cl. 346-1.100.
Stella, Joseph A., 4,623,236, Cl. 354-318.000.

Pollak, Axel; and Stein, Sondra. Method and apparatus for producing and attaching sequins. 4,623,411, Cl. 156-93.000.

Pollastro, Giovanni, to Riv-Skf Officine Di Villar Perosa S.p.A. Ball bearing. 4,623,268, Cl. 384-511.000.

Pondorfer, Walter. Electro seat. 4,623,036, Cl. 182-142.000.

Porcham, Wolfgang, to D. Swarovski & Co. Process for producing silane. 4,623,531, Cl. 423-347.000.

Porembski, Thaddeus T., to Westinghouse Electric Corp. Push-pull exhaust ventilation system for nuclear component storage and refueling canals. 4,623,511, Cl. 376-272.000.

Portman, Joe L., Jr.; and Margraf, David J., to Alcor, Inc. Piezoelectric ratio weighing device. 4,623,030, Cl. 177-210.0FP.

Potts, Vinson S. Travel chair for handicapped individuals. 4,623,163, Cl. 280-649.000.

Pouey, Michel, to Centre National de la Recherche Scientifique. Method for focusing spherical holographic diffraction gratings working by reflection, and dispersive lenses and spectrometers applying this method. 4,623,251, Cl. 356-328.000.

Pouliot, Gaston D.: *See*—
Dubreuil, Luc T.; Pouliot, Gaston D.; Cote, Gerard G.; Larouche, Rejean; and Zuber, Bretislav P., 4,622,741, Cl. 29-858.000.

Poyser, Thomas D., to Westinghouse Electric Corp. Transformer hot-spot temperature monitor. 4,623,265, Cl. 374-152.000.

PPG Industries, Inc.: *See*—
Chang, Wen-Hsuan; and McKeough, David T., 4,623,697, Cl. 525-61.000.
Donley, Harold E.; and Belli, Cheryl E., 4,623,389, Cl. 106-1.140.
McGuire, Kenneth J.; Dahlberg, John R.; and Hyatt, Charles J., 4,623,296, Cl. 414-730.000.

PPT, Inc.: *See*—
Przybylski, Stanley P., Sr., 4,622,873, Cl. 82-4.00R.

Prader, Randolph D., to Mobil Oil Corporation. Wire holder for handled plastic bags. 4,623,111, Cl. 248-97.000.

Pratley Investments Limited: *See*—
Grieves, Richard; and Pratley, Kimleigh G. M., 4,623,702, Cl. 525-528.000.

Pratley, Kimleigh G. M.: *See*—
Grieves, Richard; and Pratley, Kimleigh G. M., 4,623,702, Cl. 525-528.000.

Pressley, Douglas W.: *See*—
Nicholson, John P.; and Pressley, Douglas W., 4,623,434, Cl. 204-1.00T.

Prevorsek, Dusan C.: *See*—
Harpell, Gary A.; Kavesh, Sheldon; Palley, Igor; and Prevorsek, Dusan C., 4,623,574, Cl. 428-113.000.

Prewo, Karl M.: *See*—
Galasso, Francis S.; Prewo, Karl M.; and Veltri, Richard D., 4,623,228, Cl. 350-609.000.

Price, Donald A., Jr.; Brandt, William E.; and Verheul, Jan, to United States of America, Navy. Reentry vehicle having active control and passive design modifications. 4,623,106, Cl. 244-3.100.

Price, John G. Steam sack vulcanizing apparatus. 4,623,419, Cl. 156-502.000.

Price, Timothy D., to Rosemount Engineering Company Limited. Clock controlled dual slope voltage to frequency converter. 4,623,800, Cl. 307-261.000.

Price, William L.: *See*—
Gwozdz, Peter S.; Schmidt, Christopher O.; and Price, William L., 4,622,738, Cl. 29-576.00B.

Primages Inc.: *See*—
Kress, Kenneth, 4,623,271, Cl. 400-208.000.

Procedyne Corp.: *See*—
Japka, Joseph E.; Staffin, Robert; and Bhatia, Swarnjeet S., 4,623,400, Cl. 148-6.350.

Procter & Gamble Company, The: *See*—
Dearwester, Donald D., 4,623,074, Cl. 221-48.000.
Drobish, James L.; Spletzer, Eldon G.; and Thompson, Hugh A., 4,623,329, Cl. 604-29.000.
Nayar, Bala C.; Baier, Kathleen G.; O'Brien, David A.; and Sawicki, Edward M., 4,623,476, Cl. 252-94.000.

Products Research & Chemical Corp.: *See*—
Morris, Lester; and Singh, Hakam, 4,623,711, Cl. 528-375.000.

Pronk, Frank E. Liquid adding apparatus and method for a shower fixture. 4,623,095, Cl. 239-311.000.

Properties Leasing Company Inc.: *See*—
Shelton, Winston L., 4,623,780, Cl. 219-401.000.

Provencher, Gerald M., to InterNorth, Inc. Electrodeless discharge resonance lamp. 4,623,822, Cl. 315-39.000.

Pruehs, Allen V.: *See*—
Jones, David W.; Langdon, Albert K.; Pruehs, Allen V.; and Robinson, Darrell A., 4,622,753, Cl. 33-189.000.

Pryor, Richard L., to RCA Corporation. High circuit density ICs. 4,623,911, Cl. 357-45.000.

Przybylski, Stanley P., Sr., to PPT, Inc. Semi-automatic valve tool. 4,622,873, Cl. 82-4.00R.

Puigmarti Codina, Jose M.: *See*—
Marquez Perez, Miquel; Matas Docampo, Ricardo; Puigmarti Codina, Jose M.; Repolles-Moliner, Jose ; and Serra Sola, Jorge, 4,623,648, Cl. 514-291.000.

Purdue Research Foundation: *See*—
Chen, Chyi-Cheng; and Whistler, Roy L., 4,623,721, Cl. 536-4.100.

Pyrotechnische Fabrik F. Feistel GmbH & Co. KG: *See*—
Weber, Manfred, 4,622,899, Cl. 102-334.000.

Q.P. Corporation: *See*—
Takao, Masayasu, 4,623,488, Cl. 260-410.700.

Quaker Oats Company, The: *See—*
Holay, Sanjay H.; Kirkwood, James R.; and Raniwala, Subodh K., 4,623,546, Cl. 426-448.000.

Queen's University of Belfast, The: *See—*
Blair, Gordon P., 4,622,929, Cl. 123-65.00A.

Quest Medical, Inc.: *See—*
Thompson, Thomas C., 4,623,343, Cl. 604-405.000.

Questel, John M.; and Madonia, Ralph J., to Morgan Adhesives Company. Method of protecting decorative material with release film. 4,623,413, Cl. 156-247.000.

Quinnell, Geoffrey C., to Marley Tile A.G. Roofing systems. 4,622,789, Cl. 52-95.000.

Quinson, Jean-Francois: *See—*
Barberi, Paul; Bergez, Pierre; Brun, Maurice; Chevalier, Michel; Eyraud, Charles; and Quinson, Jean-Francois, 4,623,263, Cl. 374-33.000.

Quon, Joe S., to Multi-Tex Products Corp. Yarn product with combined fluorescent-phosphorescent appearance and method. 4,623,579, Cl. 428-215.000.

Raab, John J., to Conair Corporation. Electrically heated brush including a heat distribution barrel structure. 4,623,779, Cl. 219-222.000.

Rach, Heinz-Dieter: *See—*
Seitz, Hans; Frerichs, Udo; Rach, Heinz-Dieter; and Spendel, Siegmund, 4,623,009, Cl. 152-380.000.

Rahtz, Dieter: *See—*
Huth, Andreas; Schmiechen, Ralph; Rahtz, Dieter; Seidelmann, Dieter; and Braestrup, Claus T., 4,623,649, Cl. 514-292.000.

Raible, Donald A., to Baxter-Travenol Laboratories, Inc. Blood oxygenator. 4,623,518, Cl. 422-46.000.

Rainer, Alois, to Siemens Aktiengesellschaft. Circuit for CSD-coding of a binary number represented in two's complement. 4,623,872, Cl. 340-347.0DD.

Rajotte, Paul T.: *See—*
Kiesel, George W.; Rajotte, Paul T.; and Wambolt, LeeAnne, 4,623,865, Cl. 336-65.000.

Ralstin, Donald E.: *See—*
Kerul, Joseph A.; and Ralstin, Donald E., 4,623,208, Cl. 339-74.00R.

Ranco Incorporated: *See—*
Piesche, Gunter, 4,622,815, Cl. 60-602.000.

Rand, Michael. Visual display system with triangular cells. 4,622,881, Cl. 84-464.00R.

Raniwala, Subodh K.: *See—*
Holay, Sanjay H.; Kirkwood, James R.; and Raniwala, Subodh K., 4,623,546, Cl. 426-448.000.

Rapp, Harold, to Nabisco Brands, Inc. Pudding composition and process for preparing puddings therefrom. 4,623,552, Cl. 426-575.000.

Raskolenko, Larisa G.: *See—*
Maximov, Jury M.; Ziatdinov, Mansur K.; Kolmakov, Anatoly D.; Raskolenko, Larisa G.; Merzhanov, Alexandr G.; Borovinskaya, Inna P.; and Dubovitsky, Fedor I., 4,623,402, Cl. 148-20.300.

Rasmussen GmbH: *See—*
Rasmussen, Jorgen S.; and Sauer, Heinz, 4,622,719, Cl. 24-20.00R.

Rasmussen, Jorgen S.; and Sauer, Heinz, to Rasmussen GmbH. Clamp for hoses and the like. 4,622,719, Cl. 24-20.00R.

Rathmell, William G.: *See—*
Parry, Keith P.; Rathmell, William G.; and Worthington, Paul A., 4,623,654, Cl. 514-383.000.

Ratliff, John C. Flotation vest. 4,623,316, Cl. 441-106.000.

Ratner, Michael, to Ratner, Michael. Self-sealing neck for filter. 4,623,456, Cl. 210-168.000.

Ravaglia, Andrea, to SGS-ATES Componeti Elecltronici S.p.A. Process for the fabrication of a nonvolatile memory cell with very small thin oxide area and cell. 4,622,737, Cl. 29-571.000.

Ray, Jean, to Hutchinson. Vibration damping device. 4,623,135, Cl. 267-140.100.

Ray, William A. Gas flow control system with pilot gas booster. 4,622,999, Cl. 137-599.000.

Raychem Corporation: *See—*
Korner, Gerhard; Lutz, Edelwald; and Plettner, Horst, 4,623,134, Cl. 267-124.000.
Moisson, Marc F.; and Wisecarver, Martin L., 4,623,156, Cl. 279-106.000.

Raytheon Company: *See—*
Thomas, Calvin J., 4,623,781, Cl. 219-413.000.

RCA Corporation: *See—*
Andrevski, Zygmunt M., 4,623,608, Cl. 430-322.000.
Bolger, Thomas V., 4,623,915, Cl. 358-22.000.
Brown, Richard; and Sechi, Franco N., 4,623,556, Cl. 427-41.000.
Chen, Keming J., 4,624,014, Cl. 455-168.000.
Deal, Samuel B.; and Bartch, Donald W., 4,623,820, Cl. 313-466.000.
Fling, Russell T.; and Willis, Donald H., 4,623,913, Cl. 358-11.000.
Levine, Aaron W., 4,623,916, Cl. 358-50.000.
Marchegiano, Joseph E., 4,623,221, Cl. 350-321.000.
Pryor, Richard L., 4,623,911, Cl. 357-45.000.
Ruda, Joseph C., 4,623,064, Cl. 206-445.000.
Tults, Juri, 4,623,925, Cl. 358-183.000.
Wargo, Robert A.; and Harwood, Leopold A., 4,623,924, Cl. 358-166.000.
Woestman, John W., 4,623,879, Cl. 340-686.000.

Reagent Chemical and Research, Inc.: *See—*
Moehlman, Vernon C.; Hicke, David W.; and Stagg, George A., Jr., 4,623,150, Cl. 273-362.000.

Redfern, Thomas P.: *See—*
Rempfer, William C.; and Redfern, Thomas P., 4,624,006, Cl. 377-69.000.

Redl, Stefan; and Killian, Edmund, to Finkel Outdoor Products, Inc. Rotatable shade umbrella. 4,622,987, Cl. 135-20.00M.

Reed, Colin M., to National Research Development Corp. Throughflow treatment control. 4,622,762, Cl. 34-155.000.

Reed Tool Company: *See—*
Murdoch, Henry W.; and Schumacher, Percy W., 4,623,028, Cl. 175-371.000.

Reger, Arie: *See—*
Sapru, Krishna; Reichman, Benjamin; Reger, Arie; and Ovshinsky, Stanford R., 4,623,597, Cl. 429-101.000.

Reger, Arno: *See—*
Nestlen, Wolfgang; and Reger, Arno, 4,623,863, Cl. 335-230.000.

REICH Spezialmaschinen GmbH: *See—*
Binder, Werner; Gresser, Gerhard; and Dettelbach, Alfred, 4,622,748, Cl. 30-380.000.

Reichert, Hansjorg: *See—*
Binder, Josef; Cutter, David; Henning, Wolfgang; Schaber, Hans-Christian; Mollmer, Frank; and Reichert, Hansjorg, 4,622,856, Cl. 73-727.000.

Reichley, Fred J.: *See—*
Villarreal, John G.; Verbrugge, Calvin J.; and Reichley, Fred J., 4,623,683, Cl. 524-47.000.

Reichman, Benjamin: *See—*
Sapru, Krishna; Reichman, Benjamin; Reger, Arie; and Ovshinsky, Stanford R., 4,623,597, Cl. 429-101.000.

Reiff, Helmut: *See—*
Henning, Wolfgang; Hombach, Rudolf; Meckel, Walter; and Reiff, Helmut, 4,623,416, Cl. 156-331.700.

Reinecke, Paul: *See—*
Brandes, Wilhelm; Hanssler, Gerd; Reinecke, Paul; Scheinpflug, Hans; and Holmwood, Graham, 4,623,653, Cl. 514-383.000.
Gayer, Herbert; Reinecke, Paul; Brandes, Wilhelm; and Hanssler, Gerd, 4,623,655, Cl. 514-399.000.

Relson, Morris, to Esselte Pendaflex Corporation. Applying register marks to articles. 4,623,569, Cl. 428-42.000.

Rempfer, William C.; and Redfern, Thomas P., to Linear Technology Corporation. Bidirectional shift register using parallel inverters with adjustable transconductance. 4,624,006, Cl. 377-69.000.

Repolles-Moliner, Jose : *See—*
Marquez Perez, Miquel; Matas Docampo, Ricardo; Puigmarti Codina, Jose M.; Repolles-Moliner, Jose ; and Serra Sola, Jorge, 4,623,648, Cl. 514-291.000.

Research Corporation: *See—*
Carpino, Louis A.; and Cohen, Beri, 4,623,484, Cl. 525-54.110.
Carter, Christopher E., 4,623,315, Cl. 440-106.000.

Research Development Corporation of Japan: *See—*
Karamon, Hideaki; and Ogawa, Keiichi, 4,623,408, Cl. 148-403.000.

Restelli, Edward F., Jr.: *See—*
Cullo, Leonard A.; Restelli, Edward F., Jr.; and Shiring, Francis J., III, 4,623,530, Cl. 423-331.000.

Retelsdorf, Hans-Joachim: *See—*
Hahn, Reinhard; Retelsdorf, Hans-Joachim; Fichte, Rudolf; and Sattelberger, Siegfried, 4,623,386, Cl. 75-10.180.

Retzloff, James G.; and Sanders, Gerald W., to Viking Corporation, The. Sprinkler head. 4,623,023, Cl. 169-39.000.

Reusser, Fritz; and Rinehart, Kenneth L., Jr., to Upjohn Company, The. Acylation of tirandamycic, streptolic and sorbic acids to cephalosporin and penicillin nuclei. 4,623,644, Cl. 514-196.000.

Reuter-Stokes, Inc.: *See—*
Glesius, Frederick L.; Kroon, John C.; Schneider, Donald A.; and Myrabo, Arne L., 4,623,508, Cl. 376-254.000.

Revlon, Inc.: *See—*
Hofke, Fred; and Margolin, Irwin, 4,623,793, Cl. 250-341.000.

Rexnord Inc.: *See—*
Crandall, Robert E.; Kosulic, Kenneth F.; Rooney, Thomas C.; and Smith, Larry C., 4,622,894, Cl. 100-118.000.

Reymann, John P. Planetary blade assembly for a power lawn mower. 4,622,807, Cl. 56-295.000.

Reynolds, Michael: *See—*
Chappell, William A.; Higgins, David T.; Reynolds, Michael; and Tweed, William J., 4,622,889, Cl. 99-312.000.

Reynolds, Richard M., to Helios Research Corp. Overflow check system. 4,623,301, Cl. 417-54.000.

Rheinmetall GmbH: *See—*
Witt, Wolfram; Lips, Hendrick; Scholler, Herbert; and Schweiger, Raimund, 4,622,900, Cl. 102-387.000.
Witt, Wolfram; and Scholles, Herbert, 4,622,901, Cl. 102-476.000.

Richards, John P.: *See—*
Bresenham, Jack E.; Gay, Adrian C.; and Richards, John P., 4,623,880, Cl. 340-723.000.

Richardson, Dora N., to Imperial Chemical Industries PLC. Triphenylalkene derivatives. 4,623,660, Cl. 514-514.000.

Richardson-Vicks Inc.: *See—*
Gans, Eugene; Nacht, Sergio; and Yeung, David, 4,623,667, Cl. 514-762.000.

Richter Gedeon Vegyeszeti Gyar R.T.: *See—*
Bernath, Gabor; Kobor, Jeno ; Folop, Ferenc; Sohar, Pal; Perjesi, Pal; Ezer, Elemer; Hajos, Gyorgy; Palosi, Eva; Denes, Laszlo ; and Szporny, Laszlo , 4,623,647, Cl. 514-228.000.

Rickelton, William A., to American Cyanamid Company. Extraction of silver and palladium metals from aqueous solutions using tertiary phosphine sulfides. 4,623,522, Cl. 423-22.000.

Ricoh Company, Ltd.: *See—*
Ito, Norifumi, 4,623,827, Cl. 318-341.000.
Kaneko, Yutaka; and Funato, Hiroyoshi, 4,623,791, Cl. 250-234.000.
Wada, Yoshinori, 4,623,875, Cl. 340-347.0DD.

Ricoh Denshi Kogyo Co., Ltd.: *See—*
Kimura, Jiro, 4,622,907, Cl. 112-121.120.

Riddell, James G., to Vanderbilt University. Intravenous drug infusion apparatus. 4,623,334, Cl. 604-85.000.

Ries, Peter; Baumgart, Frank; and Mittelmeier, Heinz, to Oscobal AG. Method of producing a bone substitute material. 4,623,553, Cl. 427-2.000.

Riethmann, Max, to Georg Fischer Aktiengesellschaft. Method of and apparatus for introducing additives into a metal bath. 4,623,385, Cl. 75-53.000.

Riggen, Danny E.: *See—*
Ailman, LaVerne K.; Riggen, Danny E.; and Tarvin, Ronald L., 4,623,971, Cl. 364-513.000.

Rikagaku Kenkyusho: *See—*
Goto, Eiichi, 4,623,804, Cl. 307-476.000.

Riley, Arthur J., to T.P.T. Limited. Container for pressurized liquid. 4,623,075, Cl. 222-95.000.

Rinehart, Kenneth L., Jr.: *See—*
Reusser, Fritz; and Rinehart, Kenneth L., Jr., 4,623,644, Cl. 514-196.000.

Risberg, Robert L. Semiconductor device. 4,623,910, Cl. 357-38.000.

Ritter, Robert A., to Alberta Oil Sands Technology and Research Authority. Commutator. 4,623,203, Cl. 339-5.00P.

Ritter, Robert A., to Alberta Oil Sands Technology and Research Authority. Apparatus for continuously separating particulate solids from liquid suspensions. 4,623,442, Cl. 204-300.0EC.

Ritter, Robert E.: *See—*
DuPont, Preston S.; Ritter, Robert E.; and Stafford, John P., 4,623,951, Cl. 361-218.000.

Ritzel, Harald: *See—*
Vertesy, Laszlo ; Tripier, Dominique; and Ritzel, Harald, 4,623,714, Cl. 530-324.000.

Riv-Skf Officine Di Villar Perosa S.p.A.: *See—*
Pollastro, Giovanni, 4,623,268, Cl. 384-511.000.

Rival Manufacturing Company: *See—*
Chappell, William A.; Higgins, David T.; Reynolds, Michael; and Tweed, William J., 4,622,889, Cl. 99-312.000.

Rivers, Jacob B., Jr. Method of refining edible oil for preventing autoxidation of the oil. 4,623,489, Cl. 260-424.000.

Robert Bosch GmbH: *See—*
Braun, Wolfgang; and Konrath, Karl, 4,622,943, Cl. 123-502.000.
Denz, Helmut; Etzold, Peter; Groschel, Wolfgang; Kaiser, Gunther; Kraemer, Heinz; Nitschke, Werner; and Zechnall, Martin, 4,623,974, Cl. 364-551.000.
Junginger, Erich; Hahn, Klaus; Schnaibel, Eberhard; and Schneider, Erich, 4,622,936, Cl. 123-399.000.
Schadlich, Fritz, 4,622,779, Cl. 51-134.50R.
Wischermann, Gerhard, 4,623,922, Cl. 358-160.000.

Roberts, Christopher T., to Foseco Trading A.G. Molten metal handling vessels. 4,623,131, Cl. 266-280.000.

Roberts, Noel A.: *See—*
Hassall, Cedric H.; Johnson, William H.; and Roberts, Noel A., 4,623,639, Cl. 514-18.000.

Robinet, Jean, to Etablissements Ruggieri. Chemical oxygen generator with a low content of impurities. 4,623,520, Cl. 422-126.000.

Robinson, Darrell A.: *See—*
Jones, David W.; Langdon, Albert K.; Pruehs, Allen V.; and Robinson, Darrell A., 4,622,753, Cl. 33-189.000.

Robinson, John N.: *See—*
Kunig, Horst E., 4,622,980, Cl. 128-704.000.

Rocchi, Marc, to U.S. Philips Corporation. Divide-by-two frequency divider. 4,623,801, Cl. 307-272.00A.

Rocchi, Remo: *See—*
Conta, Renato; Perucca, Vincenzo; and Rocchi, Remo, 4,623,904, Cl. 346-140.00R.

Rockwell, Gary, to Diversified Products Corporation. Weight lifting type abdominal/back exercising apparatus. 4,623,144, Cl. 272-134.000.

Rockwell International Corporation: *See—*
Lavely, Daniel, 4,622,862, Cl. 74-588.000.
Taylor, Raymond, 4,623,934, Cl. 358-280.000.

Rodionov, Jury A.: *See—*
Ivanov, Mikhail G.; Golov, Veniamin G.; Kuzmin, Vladimir N.; Alyakrinskaya, Aida I.; Mushy, Roman Y.; Kovalev, Alexei D.; Shutova, Nadezhda V.; Rodionov, Jury A.; Molev, Igor I.; Yakovleva, Ljudmila S.; Berezin, Vitaly B.; Petrashko, Alexei I.; Shuev, Gennady M.; Bukin, Boris A.; Belkina, Tamara M., deceased; and Belkin, Naum S., administrator, 4,623,731, Cl. 548-374.000.

Rodriguez, Paul A.: *See—*
Wills, Kendall S.; and Rodriguez, Paul A., 4,623,403, Cl. 148-33.300.

Rodwell, Mark J. W., to AT&T Bell Laboratories. Transimpedance amplifier with overload protection. 4,623,786, Cl. 250-214.00A.

Roeder, Robert J., to Kimberly-Clark Corporation. Feminine napkin with unsecured top layer. 4,623,341, Cl. 604-385.00R.

Roestenberg, Jerome R. Sander shield. 4,622,782, Cl. 51-273.000.

Rogers Corporation: *See—*
Traut, G. Robert, 4,623,505, Cl. 264-570.000.

Rohm, Gunter H. Drill chuck with radial jaws. 4,623,155, Cl. 279-19.000.

Rohringer, Peter: *See—*
Bernheim, Michael; Meindl, Hubert; Rohringer, Peter; Wegmuller, Hans; and Werthemann, Dieter, 4,623,428, Cl. 162-158.000.

Rohs, Hans-Gunther, to Oerlikon-Boehringer GmbH. Jaw for chucking devices. 4,623,157, Cl. 279-123.000.

Rojas, Sonnia C.: *See—*
Tihanyi, Peter L.; Mott, Jeffrey S.; Vollmer, Hubert J.; Sovak, Maryanne; and Rojas, Sonnia C., 4,623,086, Cl. 228-123.000.

Rojey, Alexandre: *See—*
Larue, Joseph; and Rojey, Alexandre, 4,622,825, Cl. 62-102.000.

Rokugawa, Kyuji, to Tokyo Shibaura Denki Kabushiki Kaisha. Simultaneous quantitative immunoassay for different antigens or antibodies. 4,623,618, Cl. 435-6.000.

Rolls-Royce Limited: *See—*
Conolly, Ralph L., 4,623,087, Cl. 228-176.000.

Rolls Royce Motors Limited: *See—*
Marsden, Reginald G., 4,622,756, Cl. 33-556.000.

Romano, Ugo; and Iori, Giuseppe, to Anic S.p.A. Process for synthesizing allyl carbonates by polyhydric alcohols and their derivatives. 4,623,705, Cl. 526-75.000.

Roney, Thomas W., to Clark Equipment Company. Safety seat assembly for industrial vehicles. 4,623,196, Cl. 297-464.000.

Rooney, Thomas C.: *See—*
Crandall, Robert E.; Kosulic, Kenneth F.; Rooney, Thomas C.; and Smith, Larry C., 4,622,894, Cl. 100-118.000.

Roos, Dirk; Voetman, Alwin A.; Meerhof, Louis J.; and Lubin, Bertram, to Stichting Vrienden Van De Stichting Dr. Karl Landsteiner. Enucleated granulocytes, their preparation and use. 4,623,620, Cl. 435-7.000.

Rosaen, Nils O. Fluid handling device. 4,622,994, Cl. 137-557.000.

Rose, Harald; and Zach, Joachim, to Rose, Harald. Particle beam blanking system. 4,623,794, Cl. 250-396.00R.

Rosemount Engineering Company Limited: *See—*
Price, Timothy D., 4,623,800, Cl. 307-261.000.

Rosemount Inc.: *See—*
Kielb, John A., 4,623,266, Cl. 374-181.000.

Rosenberger, Siegfried; and Stegmann, Werner, to Ciba-Geigy Corporation. Process for producing phenolic thiocarboxylic esters. 4,623,745, Cl. 560-15.000.

Rosenwald, Diane: *See—*
Wallin, Glenn; Rosenwald, Diane; Citti, James; and Yong, Samuel, 4,623,542, Cl. 426-94.000.

Roton Products, Inc.: *See—*
Lochmoeller, Stephen A., 4,623,051, Cl. 192-8.00C.

Rowley, George S.: *See—*
Diffenderfer, Harold R.; and Rowley, George S., 4,622,840, Cl. 72-283.000.

RUD-Kettenfabrik Rieger & Dietz GmbH u. Co.: *See—*
Smetz, Reinhard; and Speich, Helmut, 4,622,721, Cl. 24-68.0CD.

Ruda, Joseph C., to RCA Corporation. Apparatus for storage of molded discs. 4,623,064, Cl. 206-445.000.

Rude, Edward T.; Nisenson, Jules; and Waine, Martin, to General Clutch Corporation. Headrail hardware for hanging window coverings. 4,623,012, Cl. 160-243.000.

Ruhrchemie Aktiengesellschaft: *See—*
Bexten, Ludger; Cornils, Boy; and Kupies, Dieter, 4,623,490, Cl. 260-505.00P.

Rulke, Gerhart, to Inventio AG. Cleaning apparatus for cleaning the glass lining of passenger conveying means. 4,623,060, Cl. 198-495.000.

Rupp, Roland: *See—*
von Bittera, Miklos; Dhein, Rolf; Meyer, Rolf-Volker; and Rupp, Roland, 4,623,346, Cl. 604-896.000.

Rusk, James A. Governor for controlling rotational speed. 4,623,048, Cl. 188-272.000.

Rutschmann, Erwin; and Theilemann, Ludwig, to Dr. Ing. h.c.F. Porsche Aktiengesellschaft. Air intake system of a multi-cylinder internal combustion engine. 4,622,926, Cl. 123-52.0MB.

Ruyten, Henricus M.: *See—*
Deutsch, Armin; and Ruyten, Henricus M., 4,623,945, Cl. 360-96.500.

Ruzicka, Harry L., to United Technologies Corporation. Helicopter rotor blade securement device. 4,623,300, Cl. 416-143.000.

Ryan, Frederick M.; and Feldman, Donald W., to Westinghouse Electric Corp. Method and apparatus for the detection and measurement of gases. 4,622,845, Cl. 73-24.000.

Ryobi Ltd.: *See—*
Fujiwara, Toshiaki, 4,623,832, Cl. 330-23.000.

S. C. Johnson & Son, Inc.: *See—*
Hansen, Frederick C., 4,623,692, Cl. 524-549.000.
Villarreal, John G.; Verbrugge, Calvin J.; and Reichley, Fred J., 4,623,683, Cl. 524-47.000.

Sabban, Albert, to State of Israel, Ministry of Defense, Rafael Armament & Development Authority. Microstrip antenna and antenna array. 4,623,893, Cl. 343-700.0MS.

Sadeck, James E., to United States of America, Army. Low altitude parachute system. 4,623,109, Cl. 244-152.000.

Saint-Gobain Vitrage: *See—*
Daude, Gerard; and Girard, Philippe, 4,623,592, Cl. 428-423.300.

St Jean, Richard. Shaft seal arrangement with split housing. 4,623,152, Cl. 277-60.000.

Saito, Hitoshi; Hatori, Hitoshi; and Matsubayashi, Kazuyuki, to Kabushiki Kaisha Toshiba. Loudspeaker construction. 4,623,034, Cl. 181-148.000.

Saito, Takeo; and Nagaoka, Shinji. System for automatically setting film sensitivity in camera. 4,623,231, Cl. 354-21.000.

Saka, Hiroshi; and Tanaka, Toshihide, to Matsushita Electric Industrial Co., Ltd. Microwave preamplifier. 4,623,848, Cl. 330-286.000.

Sakaguchi, Shozaburo: *See*—
Kurosaki, Masanori; Aoyagi, Yoshio; Ueki, Yoshiharu; Kaneko, Yukihiro; Motohashi, Minoru; Sakaguchi, Shozaburo; and Sawaki, Manabu, 4,623,992, Cl. 369-6.000.

Sakaguchi, Takateru: *See*—
Suzuki, Kozo; Sakaguchi, Takateru; Tomita, Osamu; and Tanaka, Yoshiaki, 4,623,292, Cl. 414-114.000.

Sakai, Souichi: *See*—
Kishi, Yasuo; Taniguchi, Hiroyuki; Sakai, Souichi; Katoh, Hitoshi; and Mizukami, Atsuo, 4,623,751, Cl. 136-244.000.

Sakakibara, Kenzo, to Canon Kabushiki Kaisha. Recording apparatus. 4,623,899, Cl. 346-76.0PH.

Sakakibara, Susumu: *See*—
Osada, Yutaka; Sakakibara, Susumu; and Nomura, Hideo, 4,623,943, Cl. 360-78.000.

Sakamaki, Katsumi; and Fukagawa, Yasuyuki, to Fuji Xerox Co., Ltd. Paper feeding device for copying machine. 4,623,138, Cl. 271-170.000.

Sakamoto, Keiji; and Toyozawa, Yukio, to Fanuc Ltd. Rotor position sensing apparatus for motors. 4,623,831, Cl. 318-799.000.

Sakamoto, Kentaro: *See*—
Kita, Yuichi; Sakamoto, Kentaro; Baba, Masao; and Okubo, Atsushi, 4,623,734, Cl. 548-545.000.

Sakamoto, Yoichi, to Matsushita Electric Industrial Co., Ltd. Television synchronous receiver. 4,623,926, Cl. 358-188.000.

Sakamoto, Yoichi: *See*—
Ibata, Akihiko; and Sakamoto, Yoichi, 4,623,404, Cl. 148-101.000.

Sakaniwa, Hideyasu: *See*—
Chikada, Ichizo; Shoji, Isamu; and Sakaniwa, Hideyasu, 4,623,304, Cl. 417-312.000.

Sakashita, Shizuka: *See*—
Motoyama, Shimesu; Kurita, Kaoru; Sakashita, Shizuka; Takei, Narimichi; and Ohno, Shigeru, 4,623,098, Cl. 241-46.040.

Sakata Shokai, Ltd.: *See*—
Shibata, Shinich; and Ito, Takashi, 4,623,008, Cl. 141-89.000.

Sakata, Tomio: *See*—
Watanabe, Sadakazu; Shinoda, Hidenori; Nitta, Tsuneo; Takebayashi, Yoichi; Hirai, Shouichi; Sakata, Tomio; Uehara, Kensuke; Takahashi, Yasuo; and Asada, Haruo, 4,624,011, Cl. 381-43.000.

Sakino, Tadashi, to Sharp Kabushiki Kaisha. High-voltage transformer cooling assembly of microwave oven. 4,623,771, Cl. 219-10.55R.

Sakurai, Minoru: *See*—
Nakanishi, Toshihide; Azuma, Tomoki; Hirao, Toshihiko; Hattori, Kiyoji; and Sakurai, Minoru, 4,623,623, Cl. 435-115.000.

Sala, Angelo: *See*—
Dotti, Enrico; and Sala, Angelo, 4,623,213, Cl. 339-276.00R.

Salminen, Arthur H., to Hopeman Brothers, Inc. Plumbing installation. 4,622,911, Cl. 114-71.000.

Salowe, Seymour; Elms, Robert T.; and Johnson, Richard A., to Westinghouse Electric Corp. Bus differential relay. 4,623,949, Cl. 361-63.000.

Salvino, Lawrence P. Hand held arm and hand muscle builder. 4,623,141, Cl. 272-68.000.

Sanborn Manufacturing Company, Inc.: *See*—
Nelson, Donald D., 4,622,857, Cl. 73-744.000.

Sand, William C.: *See*—
Binkerd, Mark S.; and Sand, William C., 4,623,760, Cl. 379-232.000.

Sanders, Donald S.: *See*—
Schoonover, Kevin G.; and Sanders, Donald S., 4,623,002, Cl. 137-625.480.

Sanders, Gerald W.: *See*—
Retzloff, James G.; and Sanders, Gerald W., 4,623,023, Cl. 169-39.000.

Sanders, Robert N.; and Laurent, Sebastian M., to Ethyl Corporation. Method of making a zeolite of the clinoptilolite type by seeding. 4,623,529, Cl. 423-328.000.

Sandoz Ltd.: *See*—
Holliger, Herbert, 4,623,720, Cl. 534-700.000.
Kaul, Bansi L., 4,623,397, Cl. 106-308.00Q.
Nicholson, Richard R.; and Gerber, Arthur H., 4,623,682, Cl. 524-3.000.

Sanjana, Zal N.: *See*—
Marchetti, Joseph R.; Sanjana, Zal N.; and Elikan, Edward, 4,623,578, Cl. 428-209.000.

Sano, Masaaki: *See*—
Mitsuoka, Katsuya; Narishige, Shinji; Kumagai, Akira; Sano, Masaaki; Hara, Shinichi; and Hanazono, Masanobu, 4,623,439, Cl. 204-192.200.

Santa Barbara Research Center: *See*—
Kern, Mark T.; and Hodges, Steven E., 4,623,788, Cl. 250-227.000.

Santini, Luis A. Ano-genital self-viewing device. 4,623,955, Cl. 362-135.000.

Santrade Ltd.: *See*—
Froeschke, Reinhard, 4,623,307, Cl. 425-8.000.

Sanyo Electric Co., Ltd.: *See*—
Chikada, Ichizo; Shoji, Isamu; and Sakaniwa, Hideyasu, 4,623,304, Cl. 417-312.000.
Kishi, Yasuo; Taniguchi, Hiroyuki; Sakai, Souichi; Katoh, Hitoshi; and Mizukami, Atsuo, 4,623,751, Cl. 136-244.000.

Sapienza, Richard S.; Slegeir, William A.; O'Hare, Thomas E.; and Mahajan, Devinder. Low temperature catalysts for methanol production. 4,623,634, Cl. 502-113.000.

Sapru, Krishna; Reichman, Benjamin; Reger, Arie; and Ovshinsky, Stanford R., to Energy Conversion Devices, Inc. Rechargeable battery and electrode used therein. 4,623,597, Cl. 429-101.000.

Sarges, Reinhard, to Pfizer Inc. Intermediates for 1,3-disubstituted piperidine compounds as neuroleptic agents. 4,623,728, Cl. 546-236.000.

Sarges, Reinhard: *See*—
Kadin, Saul B.; and Sarges, Reinhard, 4,623,725, Cl. 544-346.000.

Sarl Chaussures Labelle: *See*—
Boulier, Maurice, 4,622,764, Cl. 36-68.000.

Sasaki, Atsushi: *See*—
Hatano, Hirofumi; Yamazaki, Masayasu; Sasaki, Atsushi; and Mikami, Keigo, 4,623,311, Cl. 432-106.000.

Sasaki, Hiroaki: *See*—
Aihara, Masaki; Tsuruta, Noboru; Kawai, Yoshito; and Sasaki, Hiroaki, 4,623,777, Cl. 219-121.00L.

Sasaki, Hiroyuki: *See*—
Fuma, Toyoji; Nishikawa, Kazuyuki; Makiguchi, Naoshi; Nagano, Katsuya; Nakayama, Yoshio; and Sasaki, Hiroyuki, 4,623,499, Cl. 264-83.000.

Sasaki, Masao; Wada, Kazuo; and Tanuma, Jiro, to Oki Densen Kabushiki Kaisha; and Oki Electric Industry Company, Limited. Printed circuit board connector. 4,623,207, Cl. 339-17.0LM.

Sasaki, Masao: *See*—
Takada, Shun; Kadowaki, Takashi; Sasaki, Masao; Nishijima, Toyoki; and Onodera, Kaoru, 4,623,616, Cl. 430-545.000.

Sasaki, Noboru; Iwata, Yasuji; and Mukai, Teruo, to France Bed Co., Ltd. Apparatus for manufacturing spring unit. 4,622,839, Cl. 72-138.000.

Sato, Hideki; and Sugiura, Yoshinori, to Canon Kabushiki Kaisha. Light beam scanning apparatus. 4,623,216, Cl. 350-6.800.

Sato, Joichi; Shiono, Ryuji; Nimura, Tsutomu; Isogawa, Toshiaki; and Sato, Mitsuru, to Sony Corporation. Video camera gain control circuit. 4,623,933, Cl. 358-228.000.

Sato, Kiyosumi: *See*—
Matsumoto, Toshio; Kato, Motokazu; Sato, Kiyosumi; Mizushima, Yoshihiro; and Ohnishi, Katsumi, 4,623,962, Cl. 364-200.000.

Sato, Mitsuru: *See*—
Sato, Joichi; Shiono, Ryuji; Nimura, Tsutomu; Isogawa, Toshiaki; and Sato, Mitsuru, 4,623,933, Cl. 358-228.000.

Sato, Seiji: *See*—
Takasawa, Seigo; Shirahata, Kunikatsu; Sato, Seiji; and Takahashi, Keiichi, 4,623,722, Cl. 536-16.100.

Sato, Toshio: *See*—
Handa, Masao; Ueki, Mikio; Tokuya, Tomohiko; Hori, Mitsuaki; Yasuoka, Hidenori; Sato, Toshio; Ichihara, Takuzo; and Toyama, Kenichi, 4,623,173, Cl. 285-333.000.

Sato, Yoshio: *See*—
Miyagaki, Hisanori; Higashi, Toshihiko; Yokogawa, Atsushi; Shimada, Yoshihiro; Kurihara, Nobuo; Nishikawa, Mitsuyo; Sato, Yoshio; Watanabe, Atsumi; and Morooka, Yasuo, 4,622,922, Cl. 122-449.000.

Satori Limited: *See*—
Bazargan, Kaveh, 4,623,214, Cl. 350-3.770.
Bazargan, Kaveh, 4,623,215, Cl. 350-3.850.

Sattelberger, Siegfried: *See*—
Hahn, Reinhard; Retelsdorf, Hans-Joachim; Fichte, Rudolf; and Sattelberger, Siegfried, 4,623,386, Cl. 75-10.180.

Sauer, Heinz: *See*—
Rasmussen, Jorgen S.; and Sauer, Heinz, 4,622,719, Cl. 24-20.00R.

Savall, Vincent, to Degremont. Method and apparatus for the countercurrent mass exchange between two phases having different densities. 4,623,466, Cl. 210-634.000.

Sawaki, Manabu: *See*—
Kurosaki, Masanori; Aoyagi, Yoshio; Ueki, Yoshiharu; Kaneko, Yukihiro; Motohashi, Minoru; Sakaguchi, Shozaburo; and Sawaki, Manabu, 4,623,992, Cl. 369-6.000.

Sawicki, Edward M.: *See*—
Nayar, Bala C.; Baier, Kathleen G.; O'Brien, David A.; and Sawicki, Edward M., 4,623,476, Cl. 252-94.000.

Sawruk, Stephen D. Prosthetic axon. 4,623,355, Cl. 623-66.000.

Sawyer, Fred R.: *See*—
Doud, Wilbur O.; Davis, Robert E.; and Sawyer, Fred R., 4,623,374, Cl. 65-83.000.

Sayre, Charles F.: *See*—
Weitzenhof, David A.; and Sayre, Charles F., 4,623,162, Cl. 280-687.000.

Schaber, Hans-Christian: *See*—
Binder, Josef; Cutter, David; Henning, Wolfgang; Schaber, Hans-Christian; Mollmer, Frank; and Reichert, Hansjorg, 4,622,856, Cl. 73-727.000.

Schachar, Ronald A. Auricular instrument. 4,622,967, Cl. 128-303.150.

Schad, Kurt; and Gora, Hans-Joachim, to General Motors Corporation. Muffler of the sound reflecting type for use with internal combustion engines. 4,623,035, Cl. 181-274.000.

Schadlich, Fritz, to Robert Bosch GmbH. Method and apparatus for speed control of a grinder. 4,622,779, Cl. 51-134.50R.

Schafer, Gunter, to Security Lumber & Supply Co. Apparatus for manufacturing flexible corrugated tubes. 4,622,838, Cl. 72-49.000.

Scharf, Claus P.: *See*—
Trabert, Hans-Gerhard; and Scharf, Claus P., 4,623,182, Cl. 293-155.000.

Scharf, Otto: *See*—
Bumuller, Lothar; Engelmann, Alfred; Kille, Franz; Maier, Alfred; Scharf, Otto; and Worner, Fritz, 4,622,728, Cl. 26-18.500.

Scheck, Christopher G.: *See*—
Beale, William T.; and Scheck, Christopher G., 4,623,808, Cl. 310-15.000.

Scheffler, Gerhard; Niemeyer, Ulf; Brock, Norbert; and Pohl, Jorg, to ASTA-Werke Aktiengesellschaft Chemische Fabrik. Oxazaphosphorin-4-thio-alkanesulphonic acids, and neutral salts thereof. 4,623,742, Cl. 558-81.000.

Scheinpflug, Hans: *See*—
Brandes, Wilhelm; Hanssler, Gerd; Reinecke, Paul; Scheinpflug, Hans; and Holmwood, Graham, 4,623,653, Cl. 514-383.000.

Scheithauer, Richard A.; Vanderpool, Clarence D.; and Miller, Michael J., to GTE Products Corporation. Method for producing ammonium paratungstate. 4,623,534, Cl. 423-593.000.

Schelleng, Robert D.: *See*—
Jatkar, Arun D.; Varall, Alfred J., Jr.; and Schelleng, Robert D., 4,623,388, Cl. 75-232.000.

Schering Aktiengesellschaft: *See*—
Huth, Andreas; Schmiechen, Ralph; Rahtz, Dieter; Seidelmann, Dieter; and Braestrup, Claus T., 4,623,649, Cl. 514-292.000.

Schickhaus, Heinz: *See*—
Konig, Dieter; Schickhaus, Heinz; and Muller, Johann, 4,622,783, Cl. 51-376.000.

Schlenker, Donald D. Furrow-forming attachment for a tractor. 4,623,024, Cl. 172-572.000.

Schlichthaerle, Gottfried: *See*—
Broecker, Franz J.; Duembgen, Gerd; Pies, Wolfgang; Schlichthaerle, Gottfried; and Weber, Guenter, 4,623,668, Cl. 518-709.000.

Schlingmann, Merten: *See*—
Keller, Reinhold; and Schlingmann, Merten, 4,623,723, Cl. 536-27.000.

Schlosser, Theodoor A. J., to U.S. Philips Corporation. Reducing listeners discomfort resulting from track loss in compact disc players. 4,623,993, Cl. 369-33.000.

Schlotter, Jurgen: *See*—
Horbrugger, Karl; and Schlotter, Jurgen, 4,623,041, Cl. 187-29.00R.

Schlumberger Technology Corporation: *See*—
Locke, Stanley; Sinha, Bikash K.; and Ekstrom, Michael P., 4,622,854, Cl. 73-703.000.
Sinha, Bikash K.; and Locke, Stanley, 4,622,855, Cl. 73-703.000.

Schmid, Karl-Heinz: *See*—
Hoefer, Rainer; Schmid, Karl-Heinz; and Ackermann, Karl-Heinz, 4,623,695, Cl. 524-747.000.

Schmid, Sidney L.: *See*—
Gombrich, Peter P.; Uttermark, John A.; Schmid, Sidney L.; and Larson, Denis L., 4,623,418, Cl. 156-361.000.

Schmidt, Carl J.: *See*—
Cook, Melvin W.; and Schmidt, Carl J., 4,622,791, Cl. 52-241.000.

Schmidt, Christopher O.: *See*—
Gwozdz, Peter S.; Schmidt, Christopher O.; and Price, William L., 4,622,738, Cl. 29-576.00B.

Schmidt, Joe: *See*—
Eaton, Homer L.; and Schmidt, Joe, 4,623,797, Cl. 250-560.000.

Schmidt, Karl-Heinz: *See*—
Grebe, Reiner; Norbisrath, Max; and Schmidt, Karl-Heinz, 4,623,096, Cl. 241-30.000.

Schmiechen, Ralph: *See*—
Huth, Andreas; Schmiechen, Ralph; Rahtz, Dieter; Seidelmann, Dieter; and Braestrup, Claus T., 4,623,649, Cl. 514-292.000.

Schmierer, Roland; Handte, Reinhard; Mildenberger, Hilmar; Bauer, Klaus; Bieringer, Hermann; and Burstell, Helmut, to Hoechst Aktiengesellschaft. Isoindoles, processes for their preparation and their use as herbicidal agents. 4,623,380, Cl. 71-92.000.

Schmitz, Anthony N.; and Matta, Joseph J., to General Signal Corporation. Antenna diplexer utilizing aural input for visual service. 4,623,921, Cl. 358-143.000.

Schmitz, William E., to Westinghouse Electric Corp. Multiple phase stepper motor torque control apparatus and method. 4,623,828, Cl. 318-696.000.

Schnaibel, Eberhard: *See*—
Junginger, Erich; Hahn, Klaus; Schnaibel, Eberhard; and Schneider, Erich, 4,622,936, Cl. 123-399.000.

Schneider, Donald A.: *See*—
Glesius, Frederick L.; Kroon, John C.; Schneider, Donald A.; and Myrabo, Arne L., 4,623,508, Cl. 376-254.000.

Schneider, Erich: *See*—
Junginger, Erich; Hahn, Klaus; Schnaibel, Eberhard; and Schneider, Erich, 4,622,936, Cl. 123-399.000.

Schneider, Udo: *See*—
Arndt, Norbert; and Schneider, Udo, 4,623,092, Cl. 237-12.30C.

Schnettler, Richard A.: *See*—
Grisar, J. Martin; Dage, Richard C.; and Schnettler, Richard A., 4,623,651, Cl. 514-342.000.

Schnorf, Rudolf: *See*—
Frei, Josef; Schweri, Hans; and Schnorf, Rudolf, 4,623,515, Cl. 422-1.000.

Schoenwald, Ronald D.; and Chien, Du-Shieng, to University of Iowa Research Foundation. Oil suspended phenylephrine. 4,623,664, Cl. 514-653.000.

Schoenwetter, Henry. Christmas tree mounted smoke detector. 4,623,878, Cl. 340-628.000.

Scholler, Herbert: *See*—
Witt, Wolfram; Lips, Hendrick; Scholler, Herbert; and Schweiger, Raimund, 4,622,900, Cl. 102-387.000.

Scholles, Herbert: *See*—
Witt, Wolfram; and Scholles, Herbert, 4,622,901, Cl. 102-476.000.

Schoonover, Kevin G.; and Sanders, Donald S., to Steam Systems and Services Incorporated. Polymer control valve. 4,623,002, Cl. 137-625.480.

Schott, Lawrence A.: *See*—
Schott, Roger A.; and Schott, Lawrence A., 4,623,954, Cl. 362-72.000.

Schott, Roger A.; and Schott, Lawrence A., to Freedom Industries, Inc. Handlebar safety light. 4,623,954, Cl. 362-72.000.

Schramm, Charles H., to ETD Technology, Inc. Apparatus and method for electroless plating. 4,622,917, Cl. 118-696.000.

Schrieber, Ricky J., to Allied Corporation. Method and apparatus for linear interpolation. 4,623,977, Cl. 364-577.000.

Schriwer, Sven. Hydrostatic piston pump or engine having diagonal piston axis. 4,622,885, Cl. 91-487.000.

Schroder, Gunter, to Deutsche Gesellschaft. Apparatus for carrying out repair, maintenance or testing of apparatus, components and the like in hot cells. 4,623,294, Cl. 414-590.000.

Schulte-Elte, Karl-Heinrich; Ohloff, Gunther; Muller, Bernard L.; and Giersch, Wolfgang K., to Firmenich SA. Composition essentially consisting of trans-1-(2,6,6-trimethylcyclohexyl)-hexan-3-ol. 4,623,750, Cl. 568-822.000.

Schulthess, Dieter: *See*—
Gaisch, Helmut; Krasna, Beth; and Schulthess, Dieter, 4,622,982, Cl. 131-297.000.

Schultze, Hans, to BASF Aktiengesellschaft. Isolation of pancreatin. 4,623,624, Cl. 435-186.000.

Schulz, Winfried, to Siemens Aktiengesellschaft. Disconnect switch for metal-clad, pressurized gas-insulated high-voltage switchgear with damping resistors. 4,623,767, Cl. 200-144.0AP.

Schulze-Berge, Klaus: *See*—
Kraus, Gerold; Huber, Walter; Hack, Joachim; Schulze-Berge, Klaus; and Sold, Roland, 4,623,942, Cl. 360-75.000.

Schumacher, Heinz O. Apparatus for desolventizing and drying solvent-containing residue meal. 4,622,760, Cl. 34-65.000.

Schumacher, Percy W.: *See*—
Murdoch, Henry W.; and Schumacher, Percy W., 4,623,028, Cl. 175-371.000.

Schuster, Hans-Dieter: *See*—
Abthoff, Jorg; Schuster, Hans-Dieter; Wollenhaupt, Gottfried; Loose, Gunter; and Busch, Michael-Rainer, 4,622,809, Cl. 60-274.000.

Schweiger, Raimund: *See*—
Witt, Wolfram; Lips, Hendrick; Scholler, Herbert; and Schweiger, Raimund, 4,622,900, Cl. 102-387.000.

Schweri, Hans: *See*—
Frei, Josef; Schweri, Hans; and Schnorf, Rudolf, 4,623,515, Cl. 422-1.000.

Schwertfeger, Werner: *See*—
Siegemund, Gunter; and Schwertfeger, Werner, 4,623,491, Cl. 260-544.00F.

Sciaky Bros., Inc.: *See*—
Ford, Ronald N., 4,623,774, Cl. 219-78.130.

Scifres, Donald R.: *See*—
Streifer, William; Scifres, Donald R.; Burnham, Robert D.; and Paoli, Thomas L., 4,624,000, Cl. 372-45.000.

Scolari, John E.; Warner, Robert T.; and Deavenport, Joe E., to Life Light Systems. Controlled high voltage generator. 4,623,824, Cl. 315-241.00R.

Scop-X Research and Development Limited Partnership: *See*—
Lewis, Jean D.; Goldschmidt, Willfred; Coiro, Donald; and Engler, Phillip V., 4,623,235, Cl. 354-312.000.

Scopes, Robert K., to La Trobe University. Enzyme extraction and purification processes. 4,623,625, Cl. 435-190.000.

Scott Housing Systems, Inc.: *See*—
Scott, Samuel P., 4,622,787, Cl. 52-58.000.

Scott, Pierre: *See*—
Dufresne, Michel; Champagne, Jean-Paul; Dufresne, Daniel; Scott, Pierre; and Courtney, John, 4,623,920, Cl. 358-122.000.

Scott, Samuel P., to Scott Housing Systems, Inc. Multiple unit housing system. 4,622,787, Cl. 52-58.000.

Scott, William B., to W. A. Whitney Corp. Punching machine with selectively actuatable punches. 4,623,089, Cl. 234-114.000.

Scotti, Carlo: *See*—
Visca, Mario; and Scotti, Carlo, 4,623,437, Cl. 204-157.470.

Se-Kure Controls, Inc.: *See*—
Leyden, Roger J., 4,623,765, Cl. 200-43.220.

Seasholtz, Craig: *See*—
Berfield, Robert C.; Wacek, Rudolph W.; and Seasholtz, Craig, 4,623,366, Cl. 55-216.000.

Sechi, Franco N.: *See*—
Brown, Richard; and Sechi, Franco N., 4,623,556, Cl. 427-41.000.

Seco Tools AB: *See*—
Greiff, Hermann A., 4,623,284, Cl. 407-38.000.

Securistyle Limited: *See*—
Buckley, John E., 4,622,715, Cl. 16-370.000.

Security Lumber & Supply Co.: *See*—
Schafer, Gunter, 4,622,838, Cl. 72-49.000.

Segerstrom, Lars; H., to IMO AB. Device for pumping oil. 4,623,305, Cl. 417-365.000.

Seidelmann, Dieter: *See*—
Huth, Andreas; Schmiechen, Ralph; Rahtz, Dieter; Seidelmann, Dieter; and Braestrup, Claus T., 4,623,649, Cl. 514-292.000.

Seiken Co., Ltd.: *See*—
Takeuchi, Masatoshi, 4,622,706, Cl. 5-453.000.

Seiko Epson Kabushiki Kaisha: *See*—
Oshima, Hiroyuki; Kodaira, Toshimoto; and Mano, Toshihiko, 4,623,908, Cl. 357-23.700.
Seiko Seiki Kabushiki Kaisha: *See*—
Ishizawa, Tadao; Kotaka, Hirofumi; and Kakinuma, Masami, 4,622,823, Cl. 62-6.000.
Seitz, Hans; Frerichs, Udo; Rach, Heinz-Dieter; and Spendel, Siegmund, to Continental Gummi-Werke Aktiengesellschaft. Covering ring for a vehicle wheel. 4,623,009, Cl. 152-380.000.
Seitz, Michael E. A., to Standard Register Company, The. Color developers for pressure-sensitive or heat-sensitive recording papers. 4,623,391, Cl. 106-21.000.
Sekiguchi, Nobuhisa: *See*—
Yokoyama, Shigeki; and Sekiguchi, Nobuhisa, 4,623,615, Cl. 430-527.000.
Sekisui Kaseihin Kogyo Kabushiki Kaisha: *See*—
Masui, Kodo; Tanaka, Shigetoshi; and Kobayashi, Yoshikazu, 4,623,584, Cl. 428-304.400.
Semiconductor Energy Laboratory Co., Ltd.: *See*—
Yamazaki, Shunpei, 4,623,369, Cl. 62-11.000.
Senft, Stephen P.: *See*—
Morris, Merle E.; and Senft, Stephen P., 4,623,817, Cl. 313-275.000.
Sepaniak, Michael J.: *See*—
Coleman, Jerry T.; and Sepaniak, Michael J., 4,622,974, Cl. 128-634.000.
Serad, George A.: *See*—
Felton, Clinton D.; Gibson, Baylor D.; Jamison, Charles E.; McWhorter, William O.; and Serad, George A., 4,623,438, Cl. 204-168.000.
Seris, Jean-Louis: *See*—
Cornut, Bruno; Chambu, Claude; and Seris, Jean-Louis, 4,623,519, Cl. 422-72.000.
Serra Sola, Jorge: *See*—
Marquez Perez, Miquel; Matas Docampo, Ricardo; Puigmarti Codina, Jose M.; Repolles-Moliner, Jose ; and Serra Sola, Jorge, 4,623,648, Cl. 514-291.000.
Sevitsky, Gary S.: *See*—
Paulson, Robert T.; Sevitsky, Gary S.; and D'Agosto, Nicholas A., III, 4,623,988, Cl. 364-900.000.
SGS-ATES Componenti Elettronici SpA: *See*—
Palara, Sergio; and Torazzina, Aldo, 4,623,950, Cl. 361-79.000.
SGS-ATES Componeti Electtronici S.p.A.: *See*—
Ravaglia, Andrea, 4,622,737, Cl. 29-571.000.
Shafer, Merrill W.: *See*—
Chandrashekhar, G. V.; and Shafer, Merrill W., 4,623,906, Cl. 346-140.00R.
Shah, Shrenik K.: *See*—
Doherty, James B.; Ashe, Bonnie M.; Finke, Paul E.; Firestone, Raymond A.; Shah, Shrenik K.; and Zimmerman, Morris, 4,623,645, Cl. 514-200.000.
Shape Inc.: *See*—
Chase, William; and Martin, Armand, 4,623,062, Cl. 206-311.000.
Sharp Kabushiki Kaisha: *See*—
Juso, Hiromi; Sudoh, Kengo; and Haikawa, Yukihiko, 4,623,941, Cl. 360-18.000.
Morimoto, Masafumi; Yoshida, Kunio; and Nakanishi, Tosaku, 4,623,985, Cl. 364-900.000.
Sakino, Tadashi, 4,623,771, Cl. 219-10.55R.
Suzuki, Akira; Furukawa, Katsuki; Higashigaki, Yoshiyuki; and Harada, Shigeo, 4,623,425, Cl. 156-613.000.
Sharp, Paul H., to CBS Inc. Stereophonic system for electronic organs. 4,622,878, Cl. 84-1.240.
Shaw, Wilfrid G.: *See*—
Paparizos, Christos; Shaw, Wilfrid G.; and Callahan, James L., 4,623,635, Cl. 502-215.000.
Shell Oil Company: *See*—
Anderson, Martin, 4,623,658, Cl. 514-482.000.
Bentham, Jeremy B., 4,623,493, Cl. 261-109.000.
Johnson, Thomas H., 4,623,748, Cl. 560-204.000.
Shelton, Winston L., to Properties Leasing Company Inc. Collectramatic food warmer. 4,623,780, Cl. 219-401.000.
Shepheard, Thomas E., to Air-A-Plane Corporation. Pipe coupling. 4,623,172, Cl. 285-309.000.
Shepherd, Richard L. Vehicle wheel lock. 4,622,833, Cl. 70-226.000.
Sheppard, Donald E.: *See*—
Kenison, David F.; and Sheppard, Donald E., 4,622,808, Cl. 60-39.290.
Sherlock, Paul, to Sherwood Medical Company. Drainage bag spacer and bag incorporating same. 4,622,981, Cl. 128-762.000.
Sherman Industries, Inc.: *See*—
Tomasello, Anthony J., 4,622,714, Cl. 15-316.00R.
Sherwin, Robert M.: *See*—
Abrams, Jack Z.; and Sherwin, Robert M., 4,623,523, Cl. 423-242.000.
Sherwood Medical Company: *See*—
Sherlock, Paul, 4,622,981, Cl. 128-762.000.
Shibata, Kiyoshi: *See*—
Irie, Yoichiro; Kimura, Hiroshi; Hisajima, Masahiko; Shibata, Kiyoshi; and Yoshikawa, Yasuhiko, 4,623,137, Cl. 271-160.000.
Shibata, Shinich; and Ito, Takashi, to Sakata Shokai, Ltd. Automatic dispensing system. 4,623,008, Cl. 141-89.000.
Shibata, Tadashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for manufacturing a semiconductor device utilizing self-aligned silicide regions. 4,622,735, Cl. 29-571.000.
Shibata, Toshihiro: *See*—
Minagawa, Motonobu; Nakahara, Yutaka; Shibata, Toshihiro; and Arata, Ryozo, 4,623,685, Cl. 524-99.000.
Shibazaki Seisakusho Ltd.: *See*—
Nishikawa, Masaji, 4,623,070, Cl. 215-329.000.
Shigematsu, Takashi: *See*—
Watanabe, Tomoyuki; Shigematsu, Takashi; and Tokoro, Setsuo, 4,623,052, Cl. 192-21.500.
Shima, Hiroshi; and Honma, Hiroshi, to Hochiki Corporation. Alarm system to transmit detection information detected by a detector due to a radio system. 4,623,876, Cl. 340-539.000.
Shimada, Yoshihiro: *See*—
Miyagaki, Hisanori; Higashi, Toshihiko; Yokogawa, Atsushi; Shimada, Yoshihiro; Kurihara, Nobuo; Nishikawa, Mitsuyo; Sato, Yoshio; Watanabe, Atsumi; and Morooka, Yasuo, 4,622,922, Cl. 122-449.000.
Shimizu, Masami; and Matsuyama, Shinichi, to Canon Kabushiki Kaisha. Camera. 4,623,234, Cl. 354-286.000.
Shin-Etsu Chemical Co., Ltd.: *See*—
Inoue, Yoshio; Okami, Takehide; Yokoo, Koji; and Kinami, Hitoshi, 4,623,693, Cl. 524-700.000.
Shin-Gijutsu Kaihatsu Jigyodan: *See*—
Masumoto, Tsuyoshi; Esashi, Kiyoyuki; and Nose, Masateru, 4,623,387, Cl. 420-41.000.
Shinagawa Refractories Co., Ltd.: *See*—
Toda, Masumi; Mori, Masashi; Nonaka, Shingo; Kyoden, Hiroshi; Ichikawa, Kenji; and Hamazaki, Yoshihisa, 4,623,393, Cl. 106-38.220.
Shing, Yuh-han: *See*—
Lewis, Steven C.; Love, Robert B.; Miller, Stephen C.; Shing, Yuh-han; Sibert, John W.; Tanner, David P.; and Tran, Nang T., 4,623,601, Cl. 430-69.000.
Shingu, Shitta, to Kabushiki Kaisha Toshiba. Non-linear control type magnetic bearing. 4,623,202, Cl. 310-90.500.
Shinko Electric Co., Ltd.: *See*—
Nakamura, Tooru, 4,623,807, Cl. 310-12.000.
Shinoda, Hidenori: *See*—
Watanabe, Sadakazu; Shinoda, Hidenori; Nitta, Tsuneo; Takebayashi, Yoichi; Hirai, Shouichi; Sakata, Tomio; Uehara, Kensuke; Takahashi, Yasuo; and Asada, Haruo, 4,624,011, Cl. 381-43.000.
Shinozaki, Takashi: *See*—
Inoue, Yuzuru; and Shinozaki, Takashi, 4,623,932, Cl. 358-227.000.
Shinsei, Kiyoichi; and Takada, Hiroaki, to Mitsubishi Denki Kabushiki Kaisha. Device for removing particulates in exhaust gas. 4,622,810, Cl. 60-286.000.
Shinsei Kogyo Co., Ltd.: *See*—
Nagano, Toshiaki, 4,623,317, Cl. 446-289.000.
Shintani, Takashi; Emura, Noriaki; Tanaka, Tetsuo; and Oda, Yasuhiro, to Toyo Soda Manufacturing Co., Ltd. Aqueous colored polymer, process for preparing same and ink comprising same. 4,623,689, Cl. 524-457.000.
Shiokawa, Kozo: *See*—
Kurahashi, Yoshio; Shiokawa, Kozo; Goto, Toshio; Kagabu, Shinzo; Kamochi, Atsumi; Moriya, Koichi; and Hayakawa, Hidenori, 4,623,377, Cl. 71-92.000.
Shiono, Ryuji: *See*—
Sato, Joichi; Shiono, Ryuji; Nimura, Tsutomu; Isogawa, Toshiaki; and Sato, Mitsuru, 4,623,933, Cl. 358-228.000.
Shionogi & Co., Ltd.: *See*—
Ikeda, Masato; and Kurokawa, Kenji, 4,623,789, Cl. 250-227.000.
Kono, Masao; Komeno, Taichitro; Ishihara, Shoichi; Yamauchi, Akira; and Okabayashi, Tadashi, 4,623,485, Cl. 540-92.000.
Shirahata, Kunikatsu: *See*—
Takasawa, Seigo; Shirahata, Kunikatsu; Sato, Seiji; and Takahashi, Keiichi, 4,623,722, Cl. 536-16.100.
Shiring, Francis J., III: *See*—
Cullo, Leonard A.; Restelli, Edward F., Jr.; and Shiring, Francis J., III, 4,623,530, Cl. 423-331.000.
Shirley, Gerald. Open-end ratchet-like wrench with releasable locking head. 4,622,870, Cl. 81-58.200.
Shiseido Company Ltd.: *See*—
Kimura, Asa; and Suzuki, Fukuji, 4,623,396, Cl. 106-291.000.
Shoji, Isamu: *See*—
Chikada, Ichizo; Shoji, Isamu; and Sakaniwa, Hideyasu, 4,623,304, Cl. 417-312.000.
Shop-Vac Corporation: *See*—
Berfield, Robert C.; Wacek, Rudolph W.; and Seasholtz, Craig, 4,623,366, Cl. 55-216.000.
Showakoki Co., Ltd.: *See*—
Umehara, Yoshio, 4,623,436, Cl. 204-149.000.
Shroyer, Richard A.: *See*—
Johnson, David A.; and Shroyer, Richard A., 4,623,929, Cl. 358-214.000.
Shuev, Gennady M.: *See*—
Ivanov, Mikhail G.; Golov, Veniamin G.; Kuzmin, Vladimir N.; Alyakrinskaya, Aida I.; Mushy, Roman Y.; Kovalev, Alexei D.; Shutova, Nadezhda V.; Rodionov, Jury A.; Molev, Igor I.; Yakovleva, Ljudmila S.; Berezin, Vitaly B.; Petrashko, Alexei I.; Shuev, Gennady M.; Bukin, Boris A.; Belkina, Tamara M., deceased; and Belkin, Naum S., administrator, 4,623,731, Cl. 548-374.000.
Shutova, Nadezhda V.: *See*—
Ivanov, Mikhail G.; Golov, Veniamin G.; Kuzmin, Vladimir N.; Alyakrinskaya, Aida I.; Mushy, Roman Y.; Kovalev, Alexei D.; Shutova, Nadezhda V.; Rodionov, Jury A.; Molev, Igor I.; Yakovleva, Ljudmila S.; Berezin, Vitaly B.; Petrashko, Alexei I.;

Shuev, Gennady M.; Bukin, Boris A.; Belkina, Tamara M., deceased; and Belkin, Naum S., administrator, 4,623,731, Cl. 548-374.000.

Sibert, John W.: *See*—
Lewis, Steven C.; Love, Robert B.; Miller, Stephen C.; Shing, Yuh-han; Sibert, John W.; Tanner, David P.; and Tran, Nang T., 4,623,601, Cl. 430-69.000.

Sibit S.p.A.: *See*—
Visca, Mario; and Scotti, Carlo, 4,623,437, Cl. 204-157.470.

Siegemund, Gunter; and Schwertfeger, Werner, to Hoechst Aktiengesellschaft. Process for the preparation of halogenated aliphatic carboxylic acid fluorides. 4,623,491, Cl. 260-544.00F.

Siemens Aktiengesellschaft: *See*—
Binder, Josef; Cutter, David; Henning, Wolfgang; Schaber, Hans-Christian; Mollmer, Frank; and Reichert, Hansjorg, 4,622,856, Cl. 73-727.000.
Bulst, Wolf-Eckhart, 4,623,855, Cl. 333-195.000.
Cewers, Goran; and Olsson, Sven-Gunnar, 4,623,331, Cl. 604-65.000.
Franksen, Holger, 4,623,769, Cl. 200-250.000.
Frosien, Jurgen; and Lischke, Burkhard, 4,623,836, Cl. 324-73.0PC.
Heger, Siegfried, 4,623,090, Cl. 236-49.000.
Henkel, Hans-Joachim; and Muller, Norbert, 4,623,755, Cl. 174-110.0SR.
Rainer, Alois, 4,623,872, Cl. 340-347.0DD.
Schulz, Winfried, 4,623,767, Cl. 200-144.0AP.

Siemens Elema AB: *See*—
Cewers, Goran; and Olsson, Sven-Gunnar, 4,623,331, Cl. 604-65.000.

Silvestri, George J., Jr.: *See*—
Draper, Robert; Silvestri, George J., Jr.; and Hargrove, Homer G., 4,622,819, Cl. 60-657.000.

Simmonds, Robert C., Jr., to USM Corporation. Particulate polymeric materials and methods for using particulate polymeric materials. 4,623,589, Cl. 428-403.000.

Simpson, Harold, to Ashland Products Company. Latch and corner support for pivotal window sash. 4,622,778, Cl. 49-161.000.

Singh, Hakam: *See*—
Morris, Lester; and Singh, Hakam, 4,623,711, Cl. 528-375.000.

Sinha, Bikash K.; and Locke, Stanley, to Schlumberger Technology Corporation. Low thermal response time surface acoustic wave sensors. 4,622,855, Cl. 73-703.000.

Sinha, Bikash K.: *See*—
Locke, Stanley; Sinha, Bikash K.; and Ekstrom, Michael P., 4,622,854, Cl. 73-703.000.

Sintokogio Ltd.: *See*—
Fuma, Toyoji; Nishikawa, Kazuyuki; Makiguchi, Naoshi; Nagano, Katsuya; Nakayama, Yoshio; and Sasaki, Hiroyuki, 4,623,499, Cl. 264-83.000.

SKF GmbH: *See*—
Olschewski, Armin; Bauer, Bernhard; Leuner, Hilmar; and Dobhan, Herbert, 4,623,270, Cl. 384-576.000.

Slegeir, William A.: *See*—
Sapienza, Richard S.; Slegeir, William A.; O'Hare, Thomas E.; and Mahajan, Devinder, 4,623,634, Cl. 502-113.000.

Smerbeck, Richard V.: *See*—
Pittz, Eugene P.; and Smerbeck, Richard V., 4,623,663, Cl. 514-648.000.

Smetz, Reinhard; and Speich, Helmut, to RUD-Kettenfabrik Rieger & Dietz GmbH u. Co. Connecting device for components and for tensioning and/or control devices with belts. 4,622,721, Cl. 24-68.0CD.

Smeyers, Pierre A., to Nakachian, Raymond J. Distributor or dripper for the micro-irrigation of soils. 4,623,094, Cl. 239-109.000.

Smid, Albert: *See*—
Verhoeven, Johannes M. G.; Smid, Albert; and Amendt, Herman M. A., 4,623,496, Cl. 264-1.700.

Smith, A. Richard: *See*—
Vensko, George; Carlin, Lawrence; Nelson, Mark W.; and Smith, A. Richard, 4,624,008, Cl. 381-43.000.

Smith, Howard W.; and Douthart, Robert H., to A. O. Smith Corporation. Dual speed induction motor. 4,623,829, Cl. 318-793.000.

Smith, John H.: *See*—
Foss, Dale R.; and Smith, John H., 4,623,295, Cl. 414-608.000.

Smith, Larry C.: *See*—
Crandall, Robert E.; Kosulic, Kenneth F.; Rooney, Thomas C.; and Smith, Larry C., 4,622,894, Cl. 100-118.000.

Smith, Larry F. Method and apparatus for making post-tensioning tendons for concrete. 4,623,504, Cl. 264-566.000.

Smith, Lawther O., to Fichtel & Sachs Industries, Inc. Gas spring counterbalance system. 4,623,132, Cl. 267-34.000.

Smith, Martin A., to Pave-Mark Corporation. Preheater for road stripe applicators. 4,623,279, Cl. 404-93.000.

Smith, Peter B., to Black & Decker Inc. Improved heat sink and shaft bearing support for thermo-plastic housing. 4,623,810, Cl. 310-90.000.

SmithKline Beckman Corporation: *See*—
Perchonock, Carl D., 4,623,535, Cl. 424-43.000.

Societa' Cavi Pirelli S.p.A.: *See*—
Dotti, Enrico; and Sala, Angelo, 4,623,213, Cl. 339-276.00R.

Societe Anonyme D.B.A.: *See*—
Kervagoret, Gilbert, 4,622,814, Cl. 60-555.000.

Societe Chimique des Charbonnages, S.A.: *See*—
Hert, Marius, 4,623,567, Cl. 428-36.000.
Hert, Marius, 4,623,581, Cl. 428-220.000.

Societe DUPRE: *See*—
Dupre, Jacques, 4,622,724, Cl. 24-130.000.

Societe Nationale d'Etudes et de Construction de Moteurs d'Aviation: *See*—
Hallinger, Claude C.; and Lardellier, Alain M. J., 4,623,298, Cl. 415-139.000.

Societe Nationale Elf Aquitaine: *See*—
Cornut, Bruno; Chambu, Claude; and Seris, Jean-Louis, 4,623,519, Cl. 422-72.000.

Societe Responsabilite Limitee REP MARINE les Rochereaux: *See*—
Streichenberger, Antonius O., 4,623,433, Cl. 204-1.00R.

Societe Technisynthese Sarl: *See*—
Boulier, Maurice, 4,622,764, Cl. 36-68.000.

Soderberg, John H.; Jones, Howell A.; Eckert, Alton B.; Duwel, Edward C.; and Nambudiri, Easwaran C. N., to Pitney Bowes Inc. Postage meter with keyboard keys for commanding and requesting performance of meter operations. 4,623,987, Cl. 364-900.000.

Sohar, Pal: *See*—
Bernath, Gabor; Kobor, Jeno ; Folop, Ferenc; Sohar, Pal; Perjesi, Pal; Ezer, Elemer; Hajos, Gyorgy; Palosi, Eva; Denes, Laszlo ; and Szporny, Laszlo , 4,623,647, Cl. 514-228.000.

Sojka, Stanley A.: *See*—
Ying, Wei-chi; and Sojka, Stanley A., 4,623,464, Cl. 210-616.000.

Sold, Roland: *See*—
Kraus, Gerold; Huber, Walter; Hack, Joachim; Schulze-Berge, Klaus; and Sold, Roland, 4,623,942, Cl. 360-75.000.

Solis S.r.l.: *See*—
Vinicio, Gazzarrini, 4,622,909, Cl. 112-262.300.

Solmat Systems, Ltd.: *See*—
Yahalom, Yona, 4,622,949, Cl. 126-415.000.

Someya, Kazuo; Kita, Osamu; and Tomomura, Masaomi, to Hitachi, Ltd. Process and apparatus for recovering inert gas. 4,623,524, Cl. 423-245.000.

Sommer, Hans: *See*—
Irrlitz, Hans U.; Kick, Werner; and Sommer, Hans, 4,623,572, Cl. 428-90.000.

Sontheimer, Carl G. Convenient feedtube protector and single-motion cover lifting structure for a food processor. 4,623,097, Cl. 241-37.500.

Sony Corporation: *See*—
Ida, Mitsuru, 4,623,946, Cl. 360-96.300.
Inaga, Katsu; Uda, Nobuo; and Inoue, Tatsuo, 4,623,931, Cl. 358-227.000.
Sato, Joichi; Shiono, Ryuji; Nimura, Tsutomu; Isogawa, Toshiaki; and Sato, Mitsuru, 4,623,933, Cl. 358-228.000.

Sony/Tektronix Corporation: *See*—
Yokokawa, Hidemi; Murooka, Rikichi; Fukuzawa, Miyuki; and Tomioka, Machiko, 4,623,984, Cl. 364-900.000.

Sorma, Olli-Pekka: *See*—
Lehtinen, Jukka; and Sorma, Olli-Pekka, 4,622,758, Cl. 34-13.000.

Southland Corporation: *See*—
Mitchell, Thomas, 4,623,264, Cl. 374-117.000.

Sovak, Maryanne: *See*—
Tihanyi, Peter L.; Mott, Jeffrey S.; Vollmer, Hubert J.; Sovak, Maryanne; and Rojas, Sonnia C., 4,623,086, Cl. 228-123.000.

Spalla, Lucian J.: *See*—
Zatezalo, John M.; and Spalla, Lucian J., 4,623,979, Cl. 364-715.000.

Spector, George: *See*—
Ciraldo, Joann; Ciraldo, Joseph R.; and Spector, George, 4,623,339, Cl. 604-359.000.

Spectrex Corporation: *See*—
Hollenbeck, Keith E., 4,623,252, Cl. 356-338.000.

Speich, Helmut: *See*—
Smetz, Reinhard; and Speich, Helmut, 4,622,721, Cl. 24-68.0CD.

Speltz, Laurine M.; and Walworth, Bryant L., to American Cyanamid Company. Herbicidal pyridazines and method for controlling undesirable plant species. 4,623,376, Cl. 71-92.000.

Spencer, John E.; Carter, Duane; and Autery, Dave, to Texas Instruments Incorporated. Magnetron plasma reactor. 4,623,417, Cl. 156-345.000.

Spendel, Siegmund: *See*—
Seitz, Hans; Frerichs, Udo; Rach, Heinz-Dieter; and Spendel, Siegmund, 4,623,009, Cl. 152-380.000.

Spengler, Charles W. Communication display device. 4,622,771, Cl. 40-547.000.

Sperinde, John M., to Abbott Laboratories. Apparatus and method for determining oxygen saturation levels with increased accuracy. 4,623,248, Cl. 356-41.000.

Sperry Limited: *See*—
O'Sullivan, James P., 4,623,966, Cl. 364-461.000.

Spletzer, Eldon G.: *See*—
Drobish, James L.; Spletzer, Eldon G.; and Thompson, Hugh A., 4,623,329, Cl. 604-29.000.

Sprague, Wendell, to Mobi-Dock, Inc. Boat trailer. 4,623,161, Cl. 280-414.100.

Spriggs, Willie Jo, to Hospital Corporation of Lanier, Inc. Hospital gown. 4,622,699, Cl. 2-114.000.

Spring Industries, Inc.: *See*—
Hendrix, James E.; Lane, Kimberley J.; and Daniels, John Y., 4,623,356, Cl. 8-107.000.

Square D Company: *See*—
Erickson, Kenneth W.; and Gilliland, John H., 4,623,859, Cl. 335-14.000.

Stadler, Istvan: *See*—
Szejtli, Jozsef; Szejtli nee Rengei, Magdolna; Cseh, Gyorgy; and Stadler, Istvan, 4,623,641, Cl. 514-58.000.

Stadler, Siegmund: *See*—
Faessler, Fritz; and Stadler, Siegmund, 4,623,014, Cl. 164-7.100.

Staffin, Robert: *See—*
Japka, Joseph E.; Staffin, Robert; and Bhatia, Swarnjeet S., 4,623,400, Cl. 148-6.350.

Stafford, John P.: *See—*
DuPont, Preston S.; Ritter, Robert E.; and Stafford, John P., 4,623,951, Cl. 361-218.000.

Stagg, George A., Jr.: *See—*
Moehlman, Vernon C.; Hicke, David W.; and Stagg, George A., Jr., 4,623,150, Cl. 273-362.000.

Stancato, Enzo. Portable escape device. 4,623,038, Cl. 182-239.000.

Standard Oil Company, The: *See—*
Paparizos, Christos; Shaw, Wilfrid G.; and Callahan, James L., 4,623,635, Cl. 502-215.000.

Standard Oil Proppants Company: *See—*
Fitzgibbon, Jeremiah J., 4,623,630, Cl. 501-127.000.

Standard Register Company, The: *See—*
Seitz, Michael E. A., 4,623,391, Cl. 106-21.000.

Stanek, Jaroslav: *See—*
Zahalka, Pavel; Stanek, Jaroslav; and Matej, Jiri , 4,624,002, Cl. 373-40.000.

State of California, Department of Transportation: *See—*
Apostolos, John A., 4,623,289, Cl. 410-7.000.

State of Israel, Ministry of Defense, Rafael Armament & Development Authority: *See—*
Sabban, Albert, 4,623,893, Cl. 343-700.0MS.

Stauffer Chemical Co.: *See—*
Michaely, William J.; and Knudsen, Christopher, 4,623,384, Cl. 71-105.000.

Stead, Brian, to York Trailer Company Limited. Open sided trailer. 4,623,189, Cl. 296-181.000.

Steam Systems and Services Incorporated: *See—*
Schoonover, Kevin G.; and Sanders, Donald S., 4,623,002, Cl. 137-625.480.

Steel, James, to Ogden Electronics Ltd. Front brake control. 4,623,199, Cl. 303-6.00R.

Steen, Grant F.; and Holloway, Michael, to Burroughs Corporation. Double-action gasket assembly for EMI/RFI shielding. 4,623,752, Cl. 174-35.0GC.

Stegmann, Werner: *See—*
Rosenberger, Siegfried; and Stegmann, Werner, 4,623,745, Cl. 560-15.000.

Stein, Marcel. Integrated float and thermostatic steam trap. 4,623,091, Cl. 236-52.000.

Stein, Sondra: *See—*
Pollak, Axel; and Stein, Sondra, 4,623,411, Cl. 156-93.000.

Steinbock, Rolf. Apparatus to mechanically stress a bolt-type fastener. 4,622,730, Cl. 29-116.0AD.

Stella, Joseph A., to Polaroid Corporation. Photographic processing composition applicator. 4,623,236, Cl. 354-318.000.

Stenemann, Heinrich F., to Minnesota Mining and Manufacturing Company. Pavement marker applicator. 4,623,280, Cl. 404-94.000.

Stenger, Karl: *See—*
Kastl, Erna; Klenk, Ludwig; Faust, Horst; and Stenger, Karl, 4,623,566, Cl. 428-36.000.

Stevenson, David; and Islam, Mohammad A., to USV Pharmaceutical Corp. Process for the preparation and purification of peptides. 4,623,716, Cl. 530-333.000.

Stichting Vrienden Van De Stichting Dr. Karl Landsteiner: *See—*
Roos, Dirk; Voetman, Alwin A.; Meerhof, Louis J.; and Lubin, Bertram, 4,623,620, Cl. 435-7.000.

Stillhard, Otmar: *See—*
Hangarter, Otto; Lerch, Hansulrich; and Stillhard, Otmar, 4,622,910, Cl. 112-447.000.

Stinson, Michael K.; Hines, William L.; and Hesser, David J., to Motorola, Inc. Method and apparatus for measuring magnetic properties of magnetic materials using positive and negative magnetic saturation of the materials. 4,623,841, Cl. 324-223.000.

Stluka, Eugene F., to Florig Equipment Company, Inc. Sloped floor dump trailer. 4,623,197, Cl. 298-10.000.

Stone, George R.: *See—*
Hsiue, Eric S.; Ziatyk, Daniel; Stone, George R.; and DeBona, Bruce T., 4,623,577, Cl. 428-209.000.

Stone, Julian, to AT&T Bell Laboratories. Technique for fabricating a gas-in-glass fiber. 4,623,373, Cl. 65-2.000.

Stork, Gilbert: *See—*
Evers, William J.; Stork, Gilbert; Mookherjee, Braja D.; and Heinsohn, Howard H., Jr., 4,623,749, Cl. 560-262.000.

Story, Dennie R. Wire clamping apparatus. 4,622,722, Cl. 24-115.00R.

Stossel, Hans R., to Wild Heerbrugg AG. Apparatus for digital angular measurement. 4,623,790, Cl. 250-231.0SE.

Stothart, Geoffrey. Vehicle washing apparatus. 4,622,710, Cl. 15-53.0AB.

Stowe, Lawrence R., to Mobil Oil Corporation. Hydraulic fracturing method employing a fines control technique. 4,623,021, Cl. 166-250.000.

Streichenberger, Antonius O., to Societe Responsabilite Limitee REP MARINE les Rochereaux. Process for orienting and accelerating the formation of concretions in a marine environment. 4,623,433, Cl. 204-1.00R.

Streifer, William; Scifres, Donald R.; Burnham, Robert D.; and Paoli, Thomas L., to Xerox Corporation. Phased array semiconductor lasers with preferred emission in a single lobe. 4,624,000, Cl. 372-45.000.

Streiff, Felix: *See—*
Tauscher, Willy; Streiff, Felix; and Mathys, Peter, 4,623,454, Cl. 210-150.000.

Strong, Alexander R., to Leland Stanford Junior University, The Board of Trustees of the. Independently controlled wavetable-modification instrument and method for generating musical sound. 4,622,877, Cl. 84-1.010.

Strysik, John: *See—*
Childress, Dudley; and Strysik, John, 4,623,354, Cl. 623-25.000.

Studebaker, Kendall D. Plant container wall support. 4,623,113, Cl. 248-311.200.

Stull, Dean P.: *See—*
Jamison, Warren E.; Stull, Dean P.; and Guzzetta, Franklin H., 4,623,472, Cl. 252-12.200.

Suchanek, Vojen: *See—*
Peneder, Franz; and Suchanek, Vojen, 4,623,830, Cl. 318-798.000.

Sudoh, Kengo: *See—*
Juso, Hiromi; Sudoh, Kengo; and Haikawa, Yukihiko, 4,623,941, Cl. 360-18.000.

Suga, Yozo; Matsumoto, Fumio; and Nakayama, Tadashi, to Nippon Steel Corporation. Method for producing a grain-oriented electrical steel sheet having a high magnetic flux density. 4,623,406, Cl. 148-111.000.

Suga, Yozo; Konno, Toyohiko; and Nakayama, Tadashi, to Nippon Steel Corporation. Method for producing a grain-oriented electrical steel sheet having a high magnetic flux density. 4,623,407, Cl. 148-111.000.

Suganuma, Takashi: *See—*
Onishi, Koichi; and Suganuma, Takashi, 4,623,250, Cl. 356-316.000.

Sugata, Yoshihiro: *See—*
Umeya, Kaoru; Mishima, Michiharu; and Sugata, Yoshihiro, 4,623,586, Cl. 428-324.000.

Sugerman, Gerald; and Monte, Salvatore J., to Kenrich Petrochemicals, Inc. Neoalkoxy organo-titanates and organo-zirconates useful as coupling and polymer processing agents. 4,623,738, Cl. 556-17.000.

Sugi, Hikaru: *See—*
Fujiwara, Kenichi; Hasada, Eiichi; and Sugi, Hikaru, 4,622,828, Cl. 62-200.000.

Sugihara, Masahiro: *See—*
Nakamura, Toshiyuki; Sugihara, Masahiro; Inaba, Tsutomu; and Kimura, Tadashi, 4,623,306, Cl. 418-55.000.

Sugita, Hiroshi; Yasukawa, Takemasa; and Aritake, Masanori, to Toyoda Gosei Co., Ltd. Wiper blade rubber. 4,622,712, Cl. 15-250.360.

Sugiura, Yoshinori: *See—*
Sato, Hideki; and Sugiura, Yoshinori, 4,623,216, Cl. 350-6.800.

Sukhman, Yefim P.: *See—*
Buchroeder, Richard A.; Palmer, Eric M.; and Sukhman, Yefim P., 4,623,776, Cl. 219-121.0LG.

Sullivan, Stephen P., to Antioch Publishing Company, The. Easel-like support. 4,622,767, Cl. 40-120.000.

Sulzer Brothers Limited: *See—*
Griffith, John D., 4,623,007, Cl. 139-452.000.
Tauscher, Willy; Streiff, Felix; and Mathys, Peter, 4,623,454, Cl. 210-150.000.

Sumitomo Chemical Company, Limited: *See—*
Hayatsu, Hikoya; Nakano, Masahide; and Matsuo, Yoshikazu, 4,623,638, Cl. 502-401.000.

Sumitomo Electric Industries, Ltd.: *See—*
Fukuda, Michio; Okunishi, Toshifumi; and Fudo, Eiji, 4,622,733, Cl. 29-564.400.
Ihara, Susumu; and Tsunoda, Shinji, 4,623,884, Cl. 340-825.050.
Okuda, Hiroshi, 4,623,907, Cl. 357-17.000.
Takimoto, Hiroaki; Miyajiri, Tetsuo; Turita, Tamio; and Fujikawa, Masanori, 4,622,988, Cl. 137-209.000.

Sumitomo Rubber Industries, Ltd.: *See—*
Doi, Terumasa, 4,622,848, Cl. 73-146.000.

Summers, James B., Jr., to Abbott Laboratories. Lipoxygenase inhibiting compounds. 4,623,661, Cl. 514-575.000.

Sundahl, James G., to Bell Helmets Inc. Suction ventilated helmet. 4,622,700, Cl. 2-425.000.

Sundquist, Charles T. Absorption power generator. 4,622,820, Cl. 60-673.000.

Sunpower, Inc.: *See—*
Beale, William T.; and Scheck, Christopher G., 4,623,808, Cl. 310-15.000.

Surjaatmadja, Jim B.: *See—*
Moon, John J., Jr.; Surjaatmadja, Jim B.; and Ehlert, Mark C., 4,622,846, Cl. 73-59.000.

Suszko, Stefan F., to United States of America, Administrator, National Aeronautics and Space Administration. Method of examining microcircuit patterns. 4,623,255, Cl. 356-389.000.

Sutherland, Ivan E. Reaction control valve. 4,622,992, Cl. 137-504.000.

Suttkus, David J.: *See—*
Drutchas, Gilbert H.; and Suttkus, David J., 4,623,031, Cl. 180-148.000.

Suzuki, Akira; Furukawa, Katsuki; Higashigaki, Yoshiyuki; and Harada, Shigeo, to Sharp Kabushiki Kaisha. Method of fabricating single-crystal substrates of silicon carbide. 4,623,425, Cl. 156-613.000.

Suzuki, Fukuji: *See—*
Kimura, Asa; and Suzuki, Fukuji, 4,623,396, Cl. 106-291.000.

Suzuki, Hideyuki: *See—*
Koide, Teruhiko; Kawaguchi, Teruhiko; Suzuki, Hideyuki; and Muraoka, Tsutomu, 4,623,192, Cl. 297-216.000.

Suzuki, Kisaku. Wrapping films for "Norimaki" foods. 4,623,568, Cl. 428-40.000.

Suzuki, Kozo; Sakaguchi, Takateru; Tomita, Osamu; and Tanaka, Yoshiaki, to Kanzaki Paper Manufacturing Co., Ltd. Sheet stack delivery method and apparatus. 4,623,292, Cl. 414-114.000.

Suzuki, Yasuo; and Ando, Yasunori, to Nissin Electric Co., Ltd. Film forming apparatus. 4,622,919, Cl. 118-718.000.

Suzuki, Yasutoshi: *See*—
Itoh, Hiroshi; Ohmi, Shinya; Suzuki, Yasutoshi; Fukada, Tsuyoshi; and Hara, Kunihiko, 4,623,222, Cl. 350-331.00T.

Svaty, Vladimir, to Elitex Koncern Textilniho Strojirenstvi. Method of and apparatus for controlling weft threads in a shuttleless loom. 4,623,005, Cl. 139-452.000.

Svaty, Vladimir, to Elitex, koncern textilniho strojirenstvi. Method of an apparatus for controlling and measuring weft threads. 4,623,006, Cl. 139-452.000.

Swanson, Peter E., to Pillsbury Company, The. Dough lapper. 4,622,890, Cl. 99-450.200.

Swartzbaugh, Peter T., to Owens-Illinois, Inc. Dispensing closure valve. 4,623,077, Cl. 222-517.000.

Sweet, Roger H.: *See*—
Tsiknopoulos, Phedon J.; and Sweet, Roger H., 4,623,318, Cl. 446-330.000.

Swingline Inc.: *See*—
Olesen, Paul, 4,623,084, Cl. 227-153.000.

SWS Silicones Corporation: *See*—
Collins, Wendell; and Brooks, Howard L., 4,623,414, Cl. 156-307.500.

Synchro-Start Products, Inc.: *See*—
Baker, Keith F.; Kowalski, Richard M.; and Mishler, Ralph E., 4,623,860, Cl. 335-170.000.

Synergist Limited: *See*—
Gerow, Frank J., 4,623,116, Cl. 249-55.000.

Szejtli, Jozsef; Szejtli nee Rengei, Magdolna; Cseh, Gyorgy; and Stadler, Istvan, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T. Method of treating ulcers and erosions in the gastrointestinal system using PGI_2-methyl ester-beta cyclodextrin inclusion complexes. 4,623,641, Cl. 514-58.000.

Szejtli nee Rengei, Magdolna: *See*—
Szejtli, Jozsef; Szejtli nee Rengei, Magdolna; Cseh, Gyorgy; and Stadler, Istvan, 4,623,641, Cl. 514-58.000.

Szep, James P.: *See*—
Van der Linde, John R.; Szep, James P.; and Dayton, David, 4,623,958, Cl. 362-267.000.

Szloboda, David T. Vacuum operated apparatus for controlling the ignition timing of an engine. 4,622,937, Cl. 123-407.000.

Szporny, Laszlo : *See*—
Bernath, Gabor; Kobor, Jeno ; Folop, Ferenc; Sohar, Pal; Perjesi, Pal; Ezer, Elemer; Hajos, Gyorgy; Palosi, Eva; Denes, Laszlo ; and Szporny, Laszlo , 4,623,647, Cl. 514-228.000.

T.P.T. Limited: *See*—
Riley, Arthur J., 4,623,075, Cl. 222-95.000.

Tachikawa Spring Co. Ltd.: *See*—
Nishino, Takaichi, 4,623,114, Cl. 248-415.000.

Tachino, Kenzo, to Mitsubishi Denki Kabushiki Kaisha. Velocity detection apparatus for an elevator. 4,624,005, Cl. 377-20.000.

Tada, Akira: *See*—
Mori, Yoshinobu; and Tada, Akira, 4,623,325, Cl. 493-468.000.

Taiho Kogyo Co., Ltd.: *See*—
Futamura, Kenichiro; Asada, Eiji; and Fukuoka, Tatsuhiko, 4,623,595, Cl. 428-553.000.

Taiyo Shokai Co., Ltd.: *See*—
Aoki, Seiji; and Yanagisawa, Gennai, 4,622,801, Cl. 53-429.000.

Tajima, Kazuhiko, to Phenix Co., Ltd. Ski pants cover. 4,622,697, Cl. 2-23.000.

Takada, Hiroaki: *See*—
Shinsei, Kiyoichi; and Takada, Hiroaki, 4,622,810, Cl. 60-286.000.

Takada, Mitsuru: *See*—
Itoh, Hiroshi; and Takada, Mitsuru, 4,622,865, Cl. 74-866.000.

Takada, Shun; Kadowaki, Takashi; Sasaki, Masao; Nishijima, Toyoki; and Onodera, Kaoru, to Konishiroku Photo Industry Co., Ltd. Silver halide photographic light-sensitive material. 4,623,616, Cl. 430-545.000.

Takada, Yusaku: *See*—
Tanaka, Kiyoharu; Ohno, Akio; Murayama, Yasushi; Hoshino, Osamu; and Takada, Yusaku, 4,622,916, Cl. 118-688.000.

Takagiwa, Hiroyuki; Thuzita, Kenzi; Yamakawa, Goichi; Tomono, Makoto; Wakimoto, Saburo; Miyahara, Sadayasu; Ishida, Tetsumasa; Hyosu, Yoshihiko; and Wada, Tsuneo, to Konishiroku Photo Industry Co., Ltd. Triboelectric stabilized toner for developing electrically charged images and a method for the production thereof. 4,623,604, Cl. 430-109.000.

Takahashi, Keiichi: *See*—
Takasawa, Seigo; Shirahata, Kunikatsu; Sato, Seiji; and Takahashi, Keiichi, 4,623,722, Cl. 536-16.100.

Takahashi, Kinya, to Daikyo Co., Ltd. Tire bead protector device. 4,623,010, Cl. 152-450.000.

Takahashi, Yasuo: *See*—
Watanabe, Sadakazu; Shinoda, Hidenori; Nitta, Tsuneo; Takebayashi, Yoichi; Hirai, Shouichi; Sakata, Tomio; Uehara, Kensuke; Takahashi, Yasuo; and Asada, Haruo, 4,624,011, Cl. 381-43.000.

Takamatu, Osamu: *See*—
Takase, Junji; Yonezawa, Kazuya; and Takamatu, Osamu, 4,623,710, Cl. 528-176.000.

Takamura, Yoshiyuki, to Fuji Pack System Ltd. Method of packing articles. 4,622,802, Cl. 53-466.000.

Takao, Masayasu, to Q.P. Corporation; and Nitto Hogei Co., Ltd, a part interest. Refined fish oils and the process for production thereof. 4,623,488, Cl. 260-410.700.

Takasawa, Seigo; Shirahata, Kunikatsu; Sato, Seiji; and Takahashi, Keiichi, to Kyowa Hakko Kogyo Co., Ltd. Fortimicin factor KG_3. 4,623,722, Cl. 536-16.100.

Takase, Junji; Yonezawa, Kazuya; and Takamatu, Osamu, to Kanegafuchi Kagaku Kogyo Kubushiki Kaisha. Aromatic polyester molding. 4,623,710, Cl. 528-176.000.

Takatori, Masashige: *See*—
Harita, Yoshiyuki; Kamoshida, Yoichi; Takatori, Masashige; and Harada, Kunihiro, 4,623,609, Cl. 430-325.000.

Takebayashi, Yoichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Speech recognition apparatus. 4,624,010, Cl. 381-43.000.

Takebayashi, Yoichi: *See*—
Watanabe, Sadakazu; Shinoda, Hidenori; Nitta, Tsuneo; Takebayashi, Yoichi; Hirai, Shouichi; Sakata, Tomio; Uehara, Kensuke; Takahashi, Yasuo; and Asada, Haruo, 4,624,011, Cl. 381-43.000.

Takeda Chemical Industries, Ltd.: *See*—
Higashide, Eiji; and Horii, Satoshi, 4,623,733, Cl. 548-542.000.

Takeda Riken Kogyo Kabushikikaisha: *See*—
Ide, Keiichiro, 4,623,845, Cl. 328-60.000.

Takehara, Koichi: *See*—
Nishikawa, Toshio; Ishikawa, Youhei; Wada, Hidekazu; and Takehara, Koichi, 4,623,857, Cl. 333-219.000.

Takei, Narimichi: *See*—
Motoyama, Shimesu; Kurita, Kaoru; Sakashita, Shizuka; Takei, Narimichi; and Ohno, Shigeru, 4,623,098, Cl. 241-46.040.

Takenoya, Hideaki: *See*—
Hanyu, Susumu; Takenoya, Hideaki; and Mishima, Fumiyuki, 4,623,275, Cl. 400-662.000.

Takeshita, Fumitaka: *See*—
Arakawa, Satoshi; Toyota, Makoto; and Takeshita, Fumitaka, 4,622,954, Cl. 128-6.000.

Takeshita, Isao; Yanagihara, Nobuyuki; Gamo, Takaharu; and Moriwaki, Yoshio, to Matsushita Electric Industrial Co., Ltd. Thermal system based on thermally coupled intermittent absorption heat pump cycles. 4,623,018, Cl. 165-104.120.

Takeuchi, Masatoshi, to Seiken Co., Ltd. Air mat apparatus. 4,622,706, Cl. 5-453.000.

Takeuchi, Seizi: *See*—
Kahara, Toshiki; Matsuda, Shinpei; Ishii, Kenzo; Takeuchi, Seizi; Imahashi, Jinichi; and Honji, Akio, 4,623,415, Cl. 156-325.000.

Takimoto, Hiroaki; Miyajiri, Tetsuo; Turita, Tamio; and Fujikawa, Masanori, to Sumitomo Electric Industries, Ltd. Liquid replenishing apparatus. 4,622,988, Cl. 137-209.000.

Talbot, Normand. Collapsible support frame for plant culture trays. 4,623,066, Cl. 211-195.000.

Tam, John W. Instrument for wire manipulation in bone surgery. 4,622,960, Cl. 128-92.0VK.

Tamai, Kiminori, to TDK Corporation. Metallic magnetic powder. 4,623,405, Cl. 148-105.000.

Tamamushi, Takashige: *See*—
Nishizawa, Jun-ichi; and Tamamushi, Takashige, 4,623,909, Cl. 357-30.000.

Tanaka, Hiroaki; and Akita, Shigeyuki, to Nippon Soken, Inc. Signal transmitting device. 4,623,889, Cl. 340-870.370.

Tanaka, Kiyoharu; Ohno, Akio; Murayama, Yasushi; Hoshino, Osamu; and Takada, Yusaku, to Canon Kabushiki Kaisha. Color image forming apparatus. 4,622,916, Cl. 118-688.000.

Tanaka, Shigetoshi: *See*—
Masui, Kodo; Tanaka, Shigetoshi; and Kobayashi, Yoshikazu, 4,623,584, Cl. 428-304.400.

Tanaka, Tetsuo: *See*—
Shintani, Takashi; Emura, Noriaki; Tanaka, Tetsuo; and Oda, Yasuhiro, 4,623,689, Cl. 524-457.000.

Tanaka, Toshihide: *See*—
Saka, Hiroshi; and Tanaka, Toshihide, 4,623,848, Cl. 330-286.000.

Tanaka, Toshinori: *See*—
Hamano, Isao; Morishita, Akira; Akae, Yoshifumi; Nishimura, Youji; Tanaka, Toshinori; and Yabunaka, Kiyoshi, 4,622,930, Cl. 123-179.00K.

Tanaka, Yoshiaki: *See*—
Suzuki, Kozo; Sakaguchi, Takateru; Tomita, Osamu; and Tanaka, Yoshiaki, 4,623,292, Cl. 414-114.000.

Tanemura, Hatsumi: *See*—
Nishikawa, Toshihiro; and Tanemura, Hatsumi, 4,623,612, Cl. 430-375.000.

Tang, Raymond: *See*—
Lee, Kuan M.; Chu, Ruey S.; Wong, Nam S.; Clark, James U.; and Tang, Raymond, 4,623,894, Cl. 343-700.0MS.

Taniguchi, Hiroyuki: *See*—
Kishi, Yasuo; Taniguchi, Hiroyuki; Sakai, Souichi; Katoh, Hitoshi; and Mizukami, Atsuo, 4,623,751, Cl. 136-244.000.

Taniguchi, Nobuyuki; Ishikawa, Norio; Akada, Yasuaki; Egawa, Takeshi; and Kawamura, Kunio, to Minolta Camera Kabushiki Kaisha. Camera system capable of automatic focus control. 4,623,238, Cl. 354-406.000.

Tanino, Masahiro: *See*—
Imada, Yusuke; Hiroe, Isamu; Higuchi, Tomoyuki; Kato, Seiichi; and Tanino, Masahiro, 4,622,886, Cl. 91-520.000.

Tanner, David P.: *See*—
Lewis, Steven C.; Love, Robert B.; Miller, Stephen C.; Shing, Yuh-han; Sibert, John W.; Tanner, David P.; and Tran, Nang T., 4,623,601, Cl. 430-69.000.

Tanuma, Jiro: *See*—
Sasaki, Masao; Wada, Kazuo; and Tanuma, Jiro, 4,623,207, Cl. 339-17.0LM.

Tardio, Don: *See*—
Bensoussan, David; and Tardio, Don, 4,623,969, Cl. 364-505.000.
Tarpai, Gyula: *See*—
Grega nee Toth, Erzsebet; Nagy, Jozsef; Tarpai, Gyula; Lorik, Erno ; Toth, Istvan; Pasztor, Karoly; Bartfai nee Harsanyi, Zsuzsanna; Beres, Ilona; Tasi, Laszlo ; Urszin nee Simon, Eszter; Dombay, Zsolt; Bajusz nee Olah, Judit; and Balogh, Karoly, 4,623,383, Cl. 71-100.000.
Tarvin, Ronald L.: *See*—
Ailman, LaVerne K.; Riggen, Danny E.; and Tarvin, Ronald L., 4,623,971, Cl. 364-513.000.
Tasi, Laszlo : *See*—
Grega nee Toth, Erzsebet; Nagy, Jozsef; Tarpai, Gyula; Lorik, Erno ; Toth, Istvan; Pasztor, Karoly; Bartfai nee Harsanyi, Zsuzsanna; Beres, Ilona; Tasi, Laszlo ; Urszin nee Simon, Eszter; Dombay, Zsolt; Bajusz nee Olah, Judit; and Balogh, Karoly, 4,623,383, Cl. 71-100.000.
Task, Harry L.; and Genco, Louis V., to United States of America, Air Force. Method for measuring haze in transparencies. 4,623,258, Cl. 356-432.000.
Tatematsu, Susumu: *See*—
Tsukiyama, Yasumitsu; Kito, Yoshikazu; Hida, Junichi; and Tatematsu, Susumu, 4,622,826, Cl. 62-137.000.
Tauscher, Willy; Streiff, Felix; and Mathys, Peter, to Sulzer Brothers Limited. Mass transfer column. 4,623,454, Cl. 210-150.000.
Taylor, David; and Griffiths, Janet P., to BIP Chemicals Limited. Moulding materials. 4,623,691, Cl. 524-542.000.
Taylor, Julian S. Well pipe float valve. 4,622,993, Cl. 137-542.000.
Taylor, Raymond, to Rockwell International Corporation. AGC update apparatus and method of using same. 4,623,934, Cl. 358-280.000.
TDK Corporation: *See*—
Nakamura, Tatsuo, 4,622,726, Cl. 24-590.000.
Tamai, Kiminori, 4,623,405, Cl. 148-105.000.
Te Ka De Felten & Guilleaume Fernmeldeanlagen GmbH: *See*—
Vary, Peter, 4,623,980, Cl. 364-724.000.
Teepak, Inc.: *See*—
Glanz, Ronald P.; and Miner, Gerald E., Jr., 4,622,718, Cl. 17-49.000.
Teeple, Edward. Endotracheal tube. 4,622,965, Cl. 128-207.140.
Teigen, Bard C., to Combustion Engineering, Inc. Fluid bed combustor and apparatus for cooling particulate solids. 4,623,309, Cl. 431-170.000.
Teijin Limited: *See*—
Imose, Kazuo, 4,623,254, Cl. 356-381.000.
Yamamoto, Ryuzo; Mori, Kihei; Omoto, Yorihiko; Iai, Hidehito; and Kikuchi, Toru, 4,623,571, Cl. 428-68.000.
Tektronix, Inc.: *See*—
Drobny, Vladimir F., 4,622,736, Cl. 29-571.000.
Janko, Bozidar; Franzen, Norman R.; and Bostwick, Myron A., Jr., 4,623,819, Cl. 313-432.000.
Wahlquist, Clayton C.; and Olmstead, H. Wayne, 4,623,825, Cl. 315-368.000.
Telefonaktiebolaget LM Ericsson: *See*—
Bladh, Eric A.; and Lindholm, Lars Åke A., 4,623,885, Cl. 340-825.005.
Teleglobe Pay-TV System, Inc.: *See*—
Chomet, Marc, 4,623,918, Cl. 358-118.000.
Tendrup, Donald; and DeVito, Joseph. Garment hanger with grip. 4,623,079, Cl. 223-85.000.
Terwedow, Henry A.: *See*—
Costanza: John R.; and Terwedow, Henry A., 4,623,540, Cl. 424-81.000.
Texaco Inc.: *See*—
Yaghmaie, Farrokh; Vasconcellos, Stephen R.; and McKeon, Ronald J., 4,623,359, Cl. 44-51.000.
Texas Instruments Incorporated: *See*—
Blake, Terence G., 4,623,989, Cl. 365-156.000.
Chauvel, Gerard, 4,623,986, Cl. 364-900.000.
Harrison, Earnest R., Jr., 4,623,033, Cl. 181-120.000.
Lin, Kun-Shan; Henderson, Alva E.; and Frantz, Gene A., 4,624,012, Cl. 381-51.000.
Pejouhy, Radi; Benner, Stephen J.; and Loring, Joshua, 4,622,739, Cl. 29-622.000.
Spencer, John E.; Carter, Duane; and Autery, Dave, 4,623,417, Cl. 156-345.000.
Wills, Kendall S.; and Rodriguez, Paul A., 4,623,403, Cl. 148-33.300.
Theilemann, Ludwig: *See*—
Rutschmann, Erwin; and Theilemann, Ludwig, 4,622,926, Cl. 123-52.0MB.
Thermo Electron Corporation: *See*—
Hurley, James R.; Birkner, Joseph R.; and Nunes, Maurice, 4,622,946, Cl. 126-39.00E.
Thoma, Donald E., to GTE Communication Systems Corp. Word length converter. 4,623,874, Cl. 340-347.0DD.
Thomas, Calvin J., to Raytheon Company. Double wall oven with safe limit temperature control. 4,623,781, Cl. 219-413.000.
Thomas, Ray: *See*—
Chakrabarty, Tapan; and Thomas, Ray, 4,623,022, Cl. 166-310.000.
Thomas, Ronald S. Bottle carrier. 4,623,185, Cl. 294-87.280.
Thompson, Hugh A.: *See*—
Drobish, James L.; Spletzer, Eldon G.; and Thompson, Hugh A., 4,623,329, Cl. 604-29.000.
Thompson, Michael D.; and Mazumder, Nikhil C., to Advanced Micro Devices, Inc. Logic level translator circuit for integrated circuit semiconductor devices having transistor-transistor logic output circuitry. 4,623,803, Cl. 307-475.000.
Thompson, Randall, Jr.; and Blanco, Ernesto. Apparatus for deriving energy from variation of the level of a body of fluid. 4,622,812, Cl. 60-398.000.
Thompson, Thomas C., to Quest Medical, Inc. Parenteral fluid administration apparatus and method. 4,623,343, Cl. 604-405.000.
Thorvick, Thomas S.: *See*—
Cullen, Richard A.; and Thorvick, Thomas S., 4,623,778, Cl. 219-124.340.
Thuzita, Kenzi: *See*—
Takagiwa, Hiroyuki; Thuzita, Kenzi; Yamakawa, Goichi; Tomono, Makoto; Wakimoto, Saburo; Miyahara, Sadayasu; Ishida, Tetsumasa; Hyosu, Yoshihiko; and Wada, Tsuneo, 4,623,604, Cl. 430-109.000.
Thyagarajan, Budalur S., to University of Texas System, The. Synthesis of conducting polymers: polybutadienes from disubstituted butynes. 4,623,703, Cl. 525-535.000.
Tihanyi, Peter L.; Mott, Jeffrey S.; Vollmer, Hubert J.; Sovak, Maryanne; and Rojas, Sonnia C., to McDonnell Douglas Corporation. Process of monitoring for the reflectivity change in indium phase transition soldering. 4,623,086, Cl. 228-123.000.
Timbers, Gordon E.: *See*—
Elliot, James I.; Timbers, Gordon E.; Modler, H. Wayne; and Allen, Robert W., 4,623,541, Cl. 424-85.000.
Timm, Edward E.; and Leng, Douglas E., to Dow Chemical Company, The. Process for preparing uniformly sized polymer particles by suspension polymerization of vibratorily excited monomers in a gaseous or liquid stream. 4,623,706, Cl. 526-88.000.
Timmerman, August T.: *See*—
Huybrechts, Jozef T.; and Timmerman, August T., 4,623,481, Cl. 252-511.000.
Timmers, Richard E. Air lift axle. 4,623,165, Cl. 280-704.000.
Timpe, Gerald M.; and Deville, Terry W., to Enhancer R & D. Method and apparatus for conducting xenon inhalation studies. 4,622,976, Cl. 128-654.000.
Tingley, Eddie S., to Novus Inc. Glass scratch removal apparatus and method. 4,622,780, Cl. 51-170.00T.
Tissari, Martti, to Valmet Oy. Twin-wire forming section of a paper machine. 4,623,429, Cl. 162-300.000.
Tobler, Hans: *See*—
Durrr, Dieter; and Tobler, Hans, 4,623,378, Cl. 71-92.000.
Toda, Masumi; Mori, Masashi; Nonaka, Shingo; Kyoden, Hiroshi; Ichikawa, Kenji; and Hamazaki, Yoshihisa, to Shinagawa Refractories Co., Ltd. Refractory gun mix. 4,623,393, Cl. 106-38.220.
Todd, Leonard M. Telephone line voltage actuated switch. 4,623,759, Cl. 379-79.000.
Toganoh, Shigeo: *See*—
Ichihashi, Hiroo; Toganoh, Shigeo; and Matsufuji, Yohji, 4,623,905, Cl. 346-140.00R.
Tohyama, Masamichi: *See*—
Kaneda, Naoya; Iwasaki, Youichi; and Tohyama, Masamichi, 4,623,237, Cl. 354-403.000.
Tokai Electric Wire Company Limited: *See*—
Fukuda, Michio; Okunishi, Toshifumi; and Fudo, Eiji, 4,622,733, Cl. 29-564.400.
Tokoro, Setsuo: *See*—
Watanabe, Tomoyuki; Shigematsu, Takashi; and Tokoro, Setsuo, 4,623,052, Cl. 192-21.500.
Tokuda, Kanji: *See*—
Kubota, Kazufumi; and Tokuda, Kanji, 4,623,246, Cl. 355-38.000.
Tokuken Ltd.: *See*—
Ise, Yoji; and Konishi, Tomeo, 4,623,154, Cl. 279-1.00L.
Tokuya, Tomohiko: *See*—
Handa, Masao; Ueki, Mikio; Tokuya, Tomohiko; Hori, Mitsuaki; Yasuoka, Hidenori; Sato, Toshio; Ichihara, Takuzo; and Toyama, Kenichi, 4,623,173, Cl. 285-333.000.
Tokyo Sanyo Electric Co., Ltd.: *See*—
Chikada, Ichizo; Shoji, Isamu; and Sakaniwa, Hideyasu, 4,623,304, Cl. 417-312.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Kagami, Tomio, 4,623,975, Cl. 364-560.000.
Kasahara, Akihiro, 4,623,947, Cl. 360-109.000.
Muranushi, Jun, 4,624,007, Cl. 378-4.000.
Nabeshima, Daiki; and Nakane, Hiroshi, 4,623,994, Cl. 369-44.000.
Rokugawa, Kyuji, 4,623,618, Cl. 435-6.000.
Shibata, Tadashi, 4,622,735, Cl. 29-571.000.
Takebayashi, Yoichi, 4,624,010, Cl. 381-43.000.
Watanabe, Sadakazu; Shinoda, Hidenori; Nitta, Tsuneo; Takebayashi, Yoichi; Hirai, Shouichi; Sakata, Tomio; Uehara, Kensuke; Takahashi, Yasuo; and Asada, Haruo, 4,624,011, Cl. 381-43.000.
Yoshida, Hiromi; Miyamura, Masataka; Funakoshi, Katsumi; and Nagano, Riichiro, 4,623,610, Cl. 430-326.000.
Tomasello, Anthony J., to Sherman Industries, Inc. Fluid stripping apparatus. 4,622,714, Cl. 15-316.00R.
Tomioka, Machiko: *See*—
Yokokawa, Hidemi; Murooka, Rikichi; Fukuzawa, Miyuki; and Tomioka, Machiko, 4,623,984, Cl. 364-900.000.
Tomita, Osamu: *See*—
Suzuki, Kozo; Sakaguchi, Takateru; Tomita, Osamu; and Tanaka, Yoshiaki, 4,623,292, Cl. 414-114.000.
Tomomura, Masaomi: *See*—
Someya, Kazuo; Kita, Osamu; and Tomomura, Masaomi, 4,623,524, Cl. 423-245.000.

Tomono, Makoto: *See*—
Takagiwa, Hiroyuki; Thuzita, Kenzi; Yamakawa, Goichi; Tomono, Makoto; Wakimoto, Saburo; Miyahara, Sadayasu; Ishida, Tetsumasa; Hyosu, Yoshihiko; and Wada, Tsuneo, 4,623,604, Cl. 430-109.000.

Tomy Kogyo Co. Inc.: *See*—
Kakizaki, Katsumi; and Ajiro, Yutaka, 4,623,320, Cl. 446-462.000.

Toray Industries, Inc.: *See*—
Kojima, Masuji, 4,623,770, Cl. 219-10.410.

Torazzina, Aldo: *See*—
Palara, Sergio; and Torazzina, Aldo, 4,623,950, Cl. 361-79.000.

Toshiba Silicone Co., Ltd.: *See*—
Watanabe, Junichiro; and Funahashi, Yuichi, 4,623,739, Cl. 556-410.000.
Watanabe, Junichiro; and Funahashi, Yuichi, 4,623,741, Cl. 556-465.000.

Toth, Istvan: *See*—
Grega nee Toth, Erzsebet; Nagy, Jozsef; Tarpai, Gyula; Lorik, Erno ; Toth, Istvan; Pasztor, Karoly; Bartfai nee Harsanyi, Zsuzsanna; Beres, Ilona; Tasi, Laszlo ; Urszin nee Simon, Eszter; Dombay, Zsolt; Bajusz nee Olah, Judit; and Balogh, Karoly, 4,623,383, Cl. 71-100.000.

Toyama, Kenichi: *See*—
Handa, Masao; Ueki, Mikio; Tokuya, Tomohiko; Hori, Mitsuaki; Yasuoka, Hidenori; Sato, Toshio; Ichihara, Takuzo; and Toyama, Kenichi, 4,623,173, Cl. 285-333.000.

Toyo Boseki Kabushiki Kaisha: *See*—
Kuzumoto, Hideshi; Ukai, Tetsuo; and Uejima, Akira, 4,623,460, Cl. 210-321.100.

Toyo Soda Manufacturing Co., Ltd.: *See*—
Shintani, Takashi; Emura, Noriaki; Tanaka, Tetsuo; and Oda, Yasuhiro, 4,623,689, Cl. 524-457.000.

Toyoda Gosei Co., Ltd.: *See*—
Sugita, Hiroshi; Yasukawa, Takemasa; and Aritake, Masanori, 4,622,712, Cl. 15-250.360.

Toyomura, Shigeru, to Canon Kabushiki Kaisha. Electronic equipment which outputs data in synthetic voice. 4,623,970, Cl. 364-513.500.

Toyota Jidosha Kabushiki Kaisha: *See*—
Ito, Hiroshi; Yamada, Shigemichi; and Akashi, Teruo, 4,622,866, Cl. 74-866.000.
Itoh, Hiroshi; and Takada, Mitsuru, 4,622,865, Cl. 74-866.000.
Watanabe, Tomoyuki; Shigematsu, Takashi; and Tokoro, Setsuo, 4,623,052, Cl. 192-21.500.

Toyota, Makoto: *See*—
Arakawa, Satoshi; Toyota, Makoto; and Takeshita, Fumitaka, 4,622,954, Cl. 128-6.000.

Toyozawa, Yukio: *See*—
Sakamoto, Keiji; and Toyozawa, Yukio, 4,623,831, Cl. 318-799.000.

Trabert, Hans-Gerhard; and Scharf, Claus P., to General Motors Corporation. Bumper for vehicle, especially motor vehicles, and method of manufacture. 4,623,182, Cl. 293-155.000.

Training Labs, Inc.: *See*—
Crawford, Larry C., 4,623,312, Cl. 434-224.000.

Tran, Nang T.: *See*—
Lewis, Steven C.; Love, Robert B.; Miller, Stephen C.; Shing, Yuh-han; Sibert, John W.; Tanner, David P.; and Tran, Nang T., 4,623,601, Cl. 430-69.000.

Tranberg, Per, to Volcano International Medical AB. Method of manufacturing sleeve shaped body protectors. 4,622,908, Cl. 112-262.200.

Traut, G. Robert, to Rogers Corporation. Method of improving structures comprised of fiber reinforced plastic. 4,623,505, Cl. 264-570.000.

Trautmann, Gunther, to Index-Werke Komm.-Ges. Hahn & Tessky. Means for attaching a tool receiving sleeve to a concave slide of a machine tool. 4,622,874, Cl. 82-24.00R.

Traver, Frank J.; John, Simon M.; and Merrill, Duane F., to General Electric Company. Curable organopolysiloxane composition useful for coating optical fibers. 4,623,700, Cl. 525-478.000.

Travis, Terence: *See*—
Andrews, Donald R.; Kuseski, Roger E.; and Travis, Terence, 4,623,244, Cl. 355-24.000.

Traylor, Paul. Conduit coupling. 4,623,123, Cl. 251-340.000.

Trebes, Fred W.: *See*—
Leighton, Francis; and Trebes, Fred W., 4,623,120, Cl. 251-223.000.

Tremblay, Bruce R., to North American Philips Corporation. Spooling machine, especially for flat wire. 4,623,100, Cl. 242-25.00R.

Trias, John A., to United States of America, Navy. Real-time high-resolution 3-D large-screen display using laser-activated liquid crystal light valves. 4,623,219, Cl. 350-351.000.

Tripier, Dominique: *See*—
Vertesy, Laszlo ; Tripier, Dominique; and Ritzel, Harald, 4,623,714, Cl. 530-324.000.

Troy, Michael, to Westinghouse Electric Corp. Permanent disposal of radioactive particulate waste in cartridge containing ferromagnetic material. 4,623,510, Cl. 376-272.000.

Trudell, Jerry W. Extensible step assembly for vehicles. 4,623,160, Cl. 280-166.000.

Trull, Jeffrey G.; and Lampley, Sidney J., to Yale Security Inc. Latchbolt with adjustable backset. 4,623,174, Cl. 292-1.000.

TRW Inc.: *See*—
Drutchas, Gilbert H.; and Suttkus, David J., 4,623,031, Cl. 180-148.000.
Nyman, Phillip A., Jr., 4,623,799, Cl. 307-260.000.

TRW Repa GmbH: *See*—
Wier, Franz, 4,622,727, Cl. 24-642.000.

Tsiknopoulos, Phedon J.; and Sweet, Roger H., to Mattel, Inc. Figure with rotatable torso and vertically swinging arms. 4,623,318, Cl. 446-330.000.

Tsukakoshi, Masao, to AMP Incorporated. Latching means for electrical connectors. 4,623,210, Cl. 339-91.00R.

Tsukiyama, Yasumitsu; Kito, Yoshikazu; Hida, Junichi; and Tatematsu, Susumu, to Hoshizaki Electric Co., Ltd. Control circuit for an auger type ice maker. 4,622,826, Cl. 62-137.000.

Tsunoda, Shinji: *See*—
Ihara, Susumu; and Tsunoda, Shinji, 4,623,884, Cl. 340-825.050.

Tsuruta, Noboru: *See*—
Aihara, Masaki; Tsuruta, Noboru; Kawai, Yoshito; and Sasaki, Hiroaki, 4,623,777, Cl. 219-121.00L.

Tulpule, Bhalchandra R., to United Technologies Corporation. Coherent interface with wraparound receive and transmit memories. 4,623,997, Cl. 370-85.000.

Tulserate Limited: *See*—
Codd, Edwin T., 4,622,795, Cl. 52-648.000.

Tults, Juri, to RCA Corporation. Television receiver having character generator with non-line locked clock oscillator. 4,623,925, Cl. 358-183.000.

Tunc, Deger C. Nutrient barrier polysaccharide compositions and method of use. 4,623,539, Cl. 424-79.000.

Tunze, Norbert. Evaporation sensor for an aquarium. 4,622,991, Cl. 137-386.000.

Turbo Refrigerating Company: *See*—
Hagen, William F., 4,622,832, Cl. 62-344.000.

Turita, Tamio: *See*—
Takimoto, Hiroaki; Miyajiri, Tetsuo; Turita, Tamio; and Fujikawa, Masanori, 4,622,988, Cl. 137-209.000.

Turtschan, Alfons, to Gasti-Verpackungsmaschinen GmbH. Sterilizing method and apparatus. 4,622,800, Cl. 53-425.000.

Tweed, William J.: *See*—
Chappell, William A.; Higgins, David T.; Reynolds, Michael; and Tweed, William J., 4,622,889, Cl. 99-312.000.

Tweedy of Burnley Limited: *See*—
Pivonka, Josef K., 4,623,545, Cl. 426-502.000.

Uchida, Kenji; and Bannai, Eisuke, to National Institute For Researches In Inorganic Materials. Process for producing tin oxide fibers. 4,623,424, Cl. 156-610.000.

Uchinishi, Eizaburo, to Kawasaki Jukogyo Kabushiki Kaisha. Exhaust control system for two-cycle engine. 4,622,928, Cl. 123-65.0PE.

Uda, Nobuo: *See*—
Inaga, Katsu; Uda, Nobuo; and Inoue, Tatsuo, 4,623,931, Cl. 358-227.000.

Ueberegger, Heinrich, to KMK Karl Magerle Lizenz AG. Tool for moulding the top part of a plastics container. 4,623,117, Cl. 249-122.000.

Ueda, Makoto: *See*—
Hasegawa, Jun; and Ueda, Makoto, 4,623,582, Cl. 428-220.000.

Uehara, Kensuke: *See*—
Watanabe, Sadakazu; Shinoda, Hidenori; Nitta, Tsuneo; Takebayashi, Yoichi; Hirai, Shouichi; Sakata, Tomio; Uehara, Kensuke; Takahashi, Yasuo; and Asada, Haruo, 4,624,011, Cl. 381-43.000.

Uehara, Masao: *See*—
Ohashi, Kenji; and Uehara, Masao, 4,622,713, Cl. 15-312.00R.

Uejima, Akira: *See*—
Kuzumoto, Hideshi; Ukai, Tetsuo; and Uejima, Akira, 4,623,460, Cl. 210-321.100.

Ueki, Mikio: *See*—
Handa, Masao; Ueki, Mikio; Tokuya, Tomohiko; Hori, Mitsuaki; Yasuoka, Hidenori; Sato, Toshio; Ichihara, Takuzo; and Toyama, Kenichi, 4,623,173, Cl. 285-333.000.

Ueki, Yoshiharu: *See*—
Kurosaki, Masanori; Aoyagi, Yoshio; Ueki, Yoshiharu; Kaneko, Yukihiro; Motohashi, Minoru; Sakaguchi, Shozaburo; and Sawaki, Manabu, 4,623,992, Cl. 369-6.000.

Ukai, Tetsuo: *See*—
Kuzumoto, Hideshi; Ukai, Tetsuo; and Uejima, Akira, 4,623,460, Cl. 210-321.100.

Umehara, Yoshio, to Showakoki Co., Ltd. Method and apparatus for removing impurities from liquids. 4,623,436, Cl. 204-149.000.

Umeya, Kaoru; Mishima, Michiharu; and Sugata, Yoshihiro, to Central Glass Company, Limited. Vibration damping material of polymer base containing flake filler. 4,623,586, Cl. 428-324.000.

Union Camp Corporation: *See*—
Hayes, Kathryn S.; and Olechowski, Jerome R., 4,623,747, Cl. 560-190.000.
Leugers, Mary A., 4,622,853, Cl. 73-597.000.

Union Carbide Corporation: *See*—
Bailey, Frederick E., Jr., 4,623,674, Cl. 521-137.000.
Kearns, Nancye D., 4,623,537, Cl. 424-49.000.
Vourlis, Harry, 4,623,599, Cl. 429-174.000.

Union Oil Company of California: *See*—
Holstedt, Richard A.; and Jessup, Peter, 4,623,474, Cl. 252-47.500.
Young, Dean A., 4,623,633, Cl. 502-85.000.
Young, Dean A., 4,623,634, Cl. 502-232.000.

United Aircraft Products, Inc.: *See*—
Wiard, Maxwell R., 4,623,019, Cl. 165-146.000.

United States of America
Administrator, National Aeronautics and Space Administration: *See*—
Suszko, Stefan F., 4,623,255, Cl. 356-389.000.
Air Force: *See*—
Foss, Dale R.; and Smith, John H., 4,623,295, Cl. 414-608.000.

Fritts, David H.; and Leonard, John F., 4,623,600, Cl. 429-223.000.
Task, Harry L.; and Genco, Louis V., 4,623,258, Cl. 356-432.000.
Yu, Francis T. S., 4,623,245, Cl. 355-32.000.
Army: *See—*
James, John T.; Buettner, Leonard C.; and Genovese, James A., 4,622,852, Cl. 73-865.600.
Johnson, Richard C., 4,623,891, Cl. 342-361.000.
Sadeck, James E., 4,623,109, Cl. 244-152.000.
Urban, Stephen J.; and Bodson, Charles D., 4,623,936, Cl. 358-284.000.
Energy: *See—*
Bergman, Werner, 4,623,365, Cl. 55-131.000.
Lee, Kien-Yin, 4,623,409, Cl. 149-92.000.
Navy: *See—*
Arora, Om P.; and Brady, James H., 4,623,514, Cl. 420-555.000.
Price, Donald A., Jr.; Brandt, William E.; and Verheul, Jan, 4,623,106, Cl. 244-3.100.
Trias, John A., 4,623,219, Cl. 350-351.000.
U.S. Peroxygen Company: *See—*
Pastorino, Ronald L., 4,623,478, Cl. 252-350.000.
U.S. Philips Corporation: *See—*
Deutsch, Armin; and Ruyten, Henricus M., 4,623,945, Cl. 360-96.500.
L'hermite, Pierre, 4,623,785, Cl. 250-207.000.
Rocchi, Marc, 4,623,801, Cl. 307-272.00A.
Schlosser, Theodoor A. J., 4,623,993, Cl. 369-33.000.
van de Griend, Jan M., 4,623,812, Cl. 310-268.000.
Verhoeven, Johannes M. G.; Smid, Albert; and Amendt, Herman M. A., 4,623,496, Cl. 264-1.700.
United States Steel Corporation: *See—*
Cullo, Leonard A.; Restelli, Edward F., Jr.; and Shiring, Francis J., III, 4,623,530, Cl. 423-331.000.
United Technologies Corporation: *See—*
Galasso, Francis S.; Prewo, Karl M.; and Veltri, Richard D., 4,623,228, Cl. 350-609.000.
Kenison, David F.; and Sheppard, Donald E., 4,622,808, Cl. 60-39.290.
Madden, Thomas J., 4,622,821, Cl. 60-757.000.
Pike, Roscoe A., 4,623,591, Cl. 428-414.000.
Ruzicka, Harry L., 4,623,300, Cl. 416-143.000.
Tulpule, Bhalchandra R., 4,623,997, Cl. 370-85.000.
University of Iowa Research Foundation: *See—*
Schoenwald, Ronald D.; and Chien, Du-Shieng, 4,623,664, Cl. 514-653.000.
University of South Carolina: *See—*
Ozyagcilar, Mehmet N.; and Davis, Milton W., Jr., 4,623,532, Cl. 423-362.000.
University of Tennessee Research Corporation: *See—*
Coleman, Jerry T.; and Sepaniak, Michael J., 4,622,974, Cl. 128-634.000.
University of Texas System, The: *See—*
Thyagarajan, Budalur S., 4,623,703, Cl. 525-535.000.
Uop Inc.: *See—*
Lambert, Susan L.; Johnson, Russell W.; Lawson, Randy J.; and Barr, Tery L., 4,623,632, Cl. 502-74.000.
Upjohn Company, The: *See—*
Reusser, Fritz; and Rinehart, Kenneth L., Jr., 4,623,644, Cl. 514-196.000.
Walker, Jerry A.; and Amin, Sanjay I., 4,623,736, Cl. 549-369.000.
Yamashita, Ayako, 4,623,737, Cl. 549-471.000.
Urban, Stephen J.; and Bodson, Charles D., to United States of America, Army. Error processing technique for modified read code. 4,623,936, Cl. 358-284.000.
Urban, Warren J., to Lever Brothers Company. Bleach compositions. 4,623,357, Cl. 8-107.000.
Urig, Elmer R.; and Park, James E., to BF Goodrich Company, The. Oil filters using water-based latex binders. 4,623,462, Cl. 210-496.000.
Urszin nee Simon, Eszter: *See—*
Grega nee Toth, Erzsebet; Nagy, Jozsef; Tarpai, Gyula; Lorik, Erno ; Toth, Istvan; Pasztor, Karoly; Bartfai nee Harsanyi, Zsuzsanna; Beres, Ilona; Tasi, Laszlo ; Urszin nee Simon, Eszter; Dombay, Zsolt; Bajusz nee Olah, Judit; and Balogh, Karoly, 4,623,383, Cl. 71-100.000.
Urushibata, Yukio, to Kabushiki Kaisha Toshiba. Linked component extraction circuit for image processor. 4,624,013, Cl. 382-9.000.
Usen, Norman: *See—*
Winston, Anthony E.; Brown, Raymond; Usen, Norman; and Ansaldi, Anthony, 4,623,536, Cl. 424-49.000.
Ushimaru, Kenji: *See—*
Bernstein, Samuel; and Ushimaru, Kenji, 4,622,757, Cl. 34-1.000.
USM Corporation: *See—*
Mirley, William H., Jr.; and Maxner, Richard B., 4,622,740, Cl. 29-715.000.
Simmonds, Robert C., Jr., 4,623,589, Cl. 428-403.000.
USV Pharmaceutical Corp.: *See—*
Stevenson, David; and Islam, Mohammad A., 4,623,716, Cl. 530-333.000.
Utagawa, Ikuo; and Ito, Kazuhiko, to Alps Electric Co., Ltd. Pressure-sensitive sheet material. 4,623,766, Cl. 200-85.00R.
Utsunomiya, Mitito: *See—*
Naito, Kazufumi; and Utsunomiya, Mitito, 4,623,813, Cl. 310-313.00R.
Uttermark, John A.: *See—*
Gombrich, Peter P.; Uttermark, John A.; Schmid, Sidney L.; and Larson, Denis L., 4,623,418, Cl. 156-361.000.
V. Kann Rasmussen Holding A/S: *See—*
Nielsen, Per G., 4,622,786, Cl. 52-58.000.
Valmet Oy: *See—*
Tissari, Martti, 4,623,429, Cl. 162-300.000.
Valyocsik, Ernest W.: *See—*
Derouane, Eric G.; Valyocsik, Ernest W.; and von Ballmoos, Roland, 4,623,527, Cl. 423-306.000.
Vanassche, Roger: *See—*
Verbauwhede, Germain; and Vanassche, Roger, 4,623,281, Cl. 405-19.000.
Vandagriff, Randy D.: *See—*
Brown, Mark E.; Gamble, Bruce W.; Piatt, Michael J.; and Vandagriff, Randy D., 4,623,897, Cl. 346-75.000.
van de Griend, Jan M., to U.S. Philips Corporation. Electric motor with thin rotor-damping layer. 4,623,812, Cl. 310-268.000.
van de Merwe, Ronald H.: *See—*
Cottringer, Thomas E.; van de Merwe, Ronald H.; and Bauer, Ralph, 4,623,364, Cl. 51-309.000.
Vanderbilt University: *See—*
Riddell, James G., 4,623,334, Cl. 604-85.000.
Van der Linde, John R.; Szep, James P.; and Dayton, David, to GTE Products Corporation. Replaceable automobile headlight lamp unit. 4,623,958, Cl. 362-267.000.
Vanderpool, Clarence D.: *See—*
Scheithauer, Richard A.; Vanderpool, Clarence D.; and Miller, Michael J., 4,623,534, Cl. 423-593.000.
van der Smissen, Carl-Ernst, to Dragerwerk AG. Process for producing a catalyst for oxidizing carbon monoxide and air filter produced by the process. 4,623,637, Cl. 502-333.000.
van der Wiel, Hans M., to Johnston Pump/General Valve, Inc. Plug valve. 4,623,119, Cl. 251-163.000.
Van Laarhoven, Johannes A. H.: *See—*
Bakker, Martin; and Van Laarhoven, Johannes A. H., 4,623,602, Cl. 430-106.000.
van Lith, Theo: *See—*
Nussbaumer, Manfred; and van Lith, Theo, 4,623,198, Cl. 299-10.000.
Van Sickle, Richard G.; and Mathie, Gerald W., to GTE Valeron Corporation. Cutting tool compensator for stationary machine tool. 4,622,871, Cl. 82-1.200.
van't Riet, Bartholomeus; Elford, Howard L.; and Wampler, Galen L. Polyhydroxybenzoic acid derivatives. 4,623,659, Cl. 514-508.000.
Vantard, Georges; Clement, Gilbert; and Vasseur, Jean-Pierre, to Hospal Industrie. Artificial kidney. 4,623,450, Cl. 210-87.000.
Varall, Alfred J., Jr.: *See—*
Jatkar, Arun D.; Varall, Alfred J., Jr.; and Schelleng, Robert D., 4,623,388, Cl. 75-232.000.
Varian Associates, Inc.: *See—*
Brunelli, Richard J.; and Mestman, Scott J., 4,623,288, Cl. 409-84.000.
Giebeler, Robert H., Jr., 4,622,972, Cl. 128-399.000.
Vary, Peter, to Te Ka De Felten & Guilleaume Fernmeldeanlagen GmbH. Method of processing electrical signals by means of Fourier transformations. 4,623,980, Cl. 364-724.000.
Vasconcellos, Stephen R.: *See—*
Yaghmaie, Farrokh; Vasconcellos, Stephen R.; and McKeon, Ronald J., 4,623,359, Cl. 44-51.000.
Vassar, Kendall J. Cutting device and method for profiling sheet material. 4,622,747, Cl. 30-293.000.
Vasseur, Jean-Pierre: *See—*
Vantard, Georges; Clement, Gilbert; and Vasseur, Jean-Pierre, 4,623,450, Cl. 210-87.000.
Veltri, Richard D.: *See—*
Galasso, Francis S.; Prewo, Karl M.; and Veltri, Richard D., 4,623,228, Cl. 350-609.000.
Velvac, Inc.: *See—*
Brester, Robert R., 4,623,115, Cl. 248-479.000.
Vensko, George; Carlin, Lawrence; Nelson, Mark W.; and Smith, A. Richard, to International Telephone and Telegraph Corporation. Apparatus for automatic speech recognition. 4,624,008, Cl. 381-43.000.
Verbauwhede, Germain; and Vanassche, Roger, to N.V. Bekaert S.A. Open-mesh fabric. 4,623,281, Cl. 405-19.000.
Verbrugge, Calvin J.: *See—*
Villarreal, John G.; Verbrugge, Calvin J.; and Reichley, Fred J., 4,623,683, Cl. 524-47.000.
Verheul, Jan: *See—*
Price, Donald A., Jr.; Brandt, William E.; and Verheul, Jan, 4,623,106, Cl. 244-3.100.
Verhoeven, Johannes M. G.; Smid, Albert; and Amendt, Herman M. A., to U.S. Philips Corporation. Method of manufacturing an optical element having an aspheric surface. 4,623,496, Cl. 264-1.700.
Verstraeten, Alexander J., to Fundex. Soil-displacement drill and method for manufacturing a pile. 4,623,025, Cl. 175-21.000.
Vertesy, Laszlo ; Tripier, Dominique; and Ritzel, Harald, to Hoechst Aktiengesellschaft. Novel polypeptides with an α-amylase-inhibiting action, a process for their preparation, their use and pharmaceutical products. 4,623,714, Cl. 530-324.000.
Vezirian, Edward. Unsegmented rotary rock bit structure and hydraulic fitting. 4,623,027, Cl. 175-340.000.
Victor Company of Japan, Ltd.: *See—*
Inoue, Yuzuru; and Shinozaki, Takashi, 4,623,932, Cl. 358-227.000.
Machida, Toyotaka; and Enami, Ken, 4,623,939, Cl. 358-342.000.
Osada, Yutaka; Sakakibara, Susumu; and Nomura, Hideo, 4,623,943, Cl. 360-78.000.

Vieau, Robert G.; Anderson, Truman A.; and Johansen, Kevin C., to Loram Maintenance of Way, Inc. Rail grinding machine. 4,622,781, Cl. 51-178.000.

Viking Corporation, The: *See—*
Retzloff, James G.; and Sanders, Gerald W., 4,623,023, Cl. 169-39.000.

Villarreal, John G.; Verbrugge, Calvin J.; and Reichley, Fred J., to S.C. Johnson & Son, Inc. Fabric finish with alpha olefin resins and process. 4,623,683, Cl. 524-47.000.

Vinicio, Gazzarrini, to Solis S.r.l. Method and apparatus for applying a gusset to manufactured articles. 4,622,909, Cl. 112-262.300.

Visca, Mario; and Scotti, Carlo, to Sibit S.p.A. Catalysts for photo-assisted oxidation-reduction reactions. 4,623,437, Cl. 204-157.470.

Vitringa, Frederick A., to Geosource, Inc. Delta-shaped geophone spring. 4,623,991, Cl. 367-133.000.

Vitro Tec Fideicomiso: *See—*
Cardenas-Franco, Luis; and Heredia de la Paz, Jorge A., 4,623,375, Cl. 65-163.000.

Vock, Manfred H.: *See—*
Pittet, Alan O.; Muralidhara, Ranya; Miller, Kevin P.; Luccarelli, Domenick, Jr.; and Vock, Manfred H., 4,623,547, Cl. 426-535.000.

Voegele, Richard. Device for cutting sheets of soft material. 4,622,743, Cl. 30-140.000.

Voetman, Alwin A.: *See—*
Roos, Dirk; Voetman, Alwin A.; Meerhof, Louis J.; and Lubin, Bertram, 4,623,620, Cl. 435-7.000.

Vogler, Helmut J.; and Janssen, Peter H., to Kalvo-Vogler GmbH. Rotary slide valve. 4,623,001, Cl. 137-625.460.

Vogt, Hubert: *See—*
Maeke, Siegfried; Bauer, Adolf; Vogt, Hubert; and Wolf, Helmut, 4,623,730, Cl. 548-308.000.

Volcano International Medical AB: *See—*
Tranberg, Per, 4,622,908, Cl. 112-262.200.

Vollmer, Hubert J.: *See—*
Tihanyi, Peter L.; Mott, Jeffrey S.; Vollmer, Hubert J.; Sovak, Maryanne; and Rojas, Sonnia C., 4,623,086, Cl. 228-123.000.

Volut, Serge, to Cem- Compagnie Electro-Mecanique et Compagnie. Switching aid device. 4,623,948, Cl. 361-13.000.

von Ballmoos, Roland: *See—*
Derouane, Eric G.; Valyocsik, Ernest W.; and von Ballmoos, Roland, 4,623,527, Cl. 423-306.000.

von Bittera, Miklos; Dhein, Rolf; Meyer, Rolf-Volker; and Rupp, Roland, to Bayer Aktiengesellschaft. Isobutylene polymer active compound release systems. 4,623,346, Cl. 604-896.000.

Vosbein, Gerd; and Hergeth, Hubert, to 501 Hergeth Hollingsworth GmbH. Opening device for opening pressed fiber bales. 4,623,099, Cl. 241-101.00A.

Vourlis, Harry, to Union Carbide Corporation. Double-grooved gasket for galvanic cells. 4,623,599, Cl. 429-174.000.

Vysoka skola chemicko-technologicka: *See—*
Zahalka, Pavel; Stanek, Jaroslav; and Matej, Jiri , 4,624,002, Cl. 373-40.000.

W. A. Whitney Corp.: *See—*
Scott, William B., 4,623,089, Cl. 234-114.000.

W. H. Brady Co.: *See—*
Gnant, Russell S., 4,623,768, Cl. 200-159.00B.

W. Haking Enterprises Limited: *See—*
Wong, Wan C.; and Oshima, Shigeru, 4,623,232, Cl. 354-173.100.

W. R. Grace & Co.: *See—*
Lin, Shiow C., 4,623,558, Cl. 427-44.000.
Malcolm, Donald A., 4,623,071, Cl. 220-337.000.

Wacek, Rudolph W.: *See—*
Berfield, Robert C.; Wacek, Rudolph W.; and Seasholtz, Craig, 4,623,366, Cl. 55-216.000.

Wada, Hidekazu: *See—*
Nishikawa, Toshio; Ishikawa, Youhei; Wada, Hidekazu; and Takehara, Koichi, 4,623,857, Cl. 333-219.000.

Wada, Kazuo: *See—*
Sasaki, Masao; Wada, Kazuo; and Tanuma, Jiro, 4,623,207, Cl. 339-17.0LM.

Wada, Tsuneo: *See—*
Takagiwa, Hiroyuki; Thuzita, Kenzi; Yamakawa, Goichi; Tomono, Makoto; Wakimoto, Saburo; Miyahara, Sadayasu; Ishida, Tetsumasa; Hyosu, Yoshihiko; and Wada, Tsuneo, 4,623,604, Cl. 430-109.000.

Wada, Tsuneyuki: *See—*
Fujimori, Yoshitsugu; Adachi, Ryouhei; Ebisawa, Hiroo; Kikuchi, Nobuo; and Wada, Tsuneyuki, 4,623,190, Cl. 296-198.000.

Wada, Yoshinori, to Ricoh Company, Ltd. Coding device for image processing apparatus. 4,623,875, Cl. 340-347.0DD.

Wagner, Bodo: *See—*
Blume, Harald; and Wagner, Bodo, 4,623,191, Cl. 279-110.000.

Wahl Clipper Corporation: *See—*
Wahl, Gregory S., 4,622,745, Cl. 30-201.000.

Wahl, Gregory S., to Wahl Clipper Corporation. Hair trimming apparatus. 4,622,745, Cl. 30-201.000.

Wahlquist, Clayton C.; and Olmstead, H. Wayne, to Tektronix, Inc. Delay compensation in electromagnetic deflection systems. 4,623,825, Cl. 315-368.000.

Waine, Martin: *See—*
Rude, Edward T.; Nisenson, Jules; and Waine, Martin, 4,623,012, Cl. 160-243.000.

Wakefield, Frederick I.: *See—*
Anestis, Emmanuel; and Wakefield, Frederick I., 4,623,503, Cl. 264-302.000.

Waki, Eiichi; Kobayashi, Shigeo; Hashimoto, Yutaka; and Nakai, Miyoji, to Matsushita Electric Industrial Co., Ltd. Flat battery. 4,623,598, Cl. 429-162.000.

Wakimoto, Saburo: *See—*
Takagiwa, Hiroyuki; Thuzita, Kenzi; Yamakawa, Goichi; Tomono, Makoto; Wakimoto, Saburo; Miyahara, Sadayasu; Ishida, Tetsumasa; Hyosu, Yoshihiko; and Wada, Tsuneo, 4,623,604, Cl. 430-109.000.

Waldner Laboreinrichtungen: *See—*
Denner, Wolf J.; Biernacki, Andreas; and Breitschwerdt, Gunter, 4,622,888, Cl. 98-115.300.

Walker, Ian J.: *See—*
Hain, David A.; and Walker, Ian J., 4,623,081, Cl. 225-105.000.

Walker, Jerry A.; and Amin, Sanjay I., to Upjohn Company, The. Arylalkanoic acid process improvement. 4,623,736, Cl. 549-369.000.

Wallin, Glenn; Rosenwald, Diane; Citti, James; and Yong, Samuel, to Pillsbury Company, The. High stability, high flavor, breakfast pastry and method for preparing the same. 4,623,542, Cl. 426-94.000.

Walter, Herman D.: *See—*
Brown, Christopher K.; Kensinger, Lex D.; Klopp, Gregory S.; Long, Alden O., Jr.; Moyer, Carl L.; Over, William R.; and Walter, Herman D., 4,623,293, Cl. 414-126.000.

Walther, Gerhard: *See—*
Casals-Stenzel, Jorge; Weber, Karl-Heinz; Walther, Gerhard; Harreus, Albrecht; and Muacevic, Gojko, 4,623,646, Cl. 514-220.000.

Walworth, Bryant L.: *See—*
Speltz, Laurine M.; and Walworth, Bryant L., 4,623,376, Cl. 71-92.000.

Wambolt, LeeAnne: *See—*
Kiesel, George W.; Rajotte, Paul T.; and Wambolt, LeeAnne, 4,623,865, Cl. 336-65.000.

Wampler, Galen L.: *See—*
van't Riet, Bartholomeus; Elford, Howard L.; and Wampler, Galen L., 4,623,659, Cl. 514-508.000.

Wanderer Maschinengesellschaft mbH: *See—*
Kolblin, Rolf; and Huber, Manfred, 4,622,734, Cl. 29-568.000.

Ware, Frederick A., to Hewlett-Packard Company. Conditional carry techniques for digital processors. 4,623,982, Cl. 364-788.000.

Wargo, Robert A.; and Harwood, Leopold A., to RCA Corporation. Video signal auto peaking circuitry. 4,623,924, Cl. 358-166.000.

Waring, David L., to AT&T Bell Laboratories. Multi-function control interface circuit. 4,623,888, Cl. 340-826.000.

Warner-Lambert Company: *See—*
Pittz, Eugene P.; and Smerbeck, Richard V., 4,623,663, Cl. 514-648.000.

Warner, Robert T.: *See—*
Scolari, John E.; Warner, Robert T.; and Deavenport, Joe E., 4,623,824, Cl. 315-241.00R.

Warren Engineering Pty. Ltd.: *See—*
Warren, William C.; and Futo, Arpad, 4,622,903, Cl. 110-221.000.

Warren, Steven M., to Boeing Company, The. Dual mode shock absorber and method. 4,623,049, Cl. 188-281.000.

Warren, William C.; and Futo, Arpad, to Warren Engineering Pty. Ltd. Sewage screenings disposal system. 4,622,903, Cl. 110-221.000.

Washer, Stone P., to Phillips Petroleum Company. Hydrocarbon conversion. 4,623,443, Cl. 208-67.000.

Watanabe, Atsumi: *See—*
Miyagaki, Hisanori; Higashi, Toshihiko; Yokogawa, Atsushi; Shimada, Yoshihiro; Kurihara, Nobuo; Nishikawa, Mitsuyo; Sato, Yoshio; Watanabe, Atsumi; and Morooka, Yasuo, 4,622,922, Cl. 122-449.000.

Watanabe, Junichiro; and Funahashi, Yuichi, to Toshiba Silicone Co., Ltd. Nitrogen-containing organosilicon compounds. 4,623,739, Cl. 556-410.000.

Watanabe, Junichiro; and Funahashi, Yuichi, to Toshiba Silicone Co., Ltd. Chlorosilane compounds. 4,623,741, Cl. 556-465.000.

Watanabe, Junji, to Kabushiki Kaisha Toshiba. Image building apparatus. 4,623,900, Cl. 346-76.0PH.

Watanabe, Junji, to Kabushiki Kaisha Toshiba. Scanning apparatus. 4,623,937, Cl. 358-285.000.

Watanabe, Sadakazu; Shinoda, Hidenori; Nitta, Tsuneo; Takebayashi, Yoichi; Hirai, Shouichi; Sakata, Tomio; Uehara, Kensuke; Takahashi, Yasuo; and Asada, Haruo, to Tokyo Shibaura Denki Kabushiki Kaisha. Speech recognition system. 4,624,011, Cl. 381-43.000.

Watanabe, Takaya; and Kitano, Toshihiko, to NEC Corporation. Surface acoustic wave dispersive delay lines having a laser irridated focus area for eliminating undesired saw concentrations. 4,623,853, Cl. 333-151.000.

Watanabe, Tomoyuki; Shigematsu, Takashi; and Tokoro, Setsuo, to Toyota Jidosha Kabushiki Kaisha. Method and apparatus for controlling an electromagnetic clutch for use on a vehicle. 4,623,052, Cl. 192-21.500.

Waters, Michael A., to Application Engineering Corporation. Passive mold cooling and heating method. 4,623,497, Cl. 264-40.600.

Watson, Gordon W.: *See—*
Garretson, Oliver R.; and Watson, Gordon W., 4,623,839, Cl. 324-158.00P.

Watson, James M.: *See—*
Menard, Kevin P.; Butler, James R.; and Watson, James M., 4,623,430, Cl. 203-9.000.

Wattier, Maurice F., to Equipements Automobiles Marchall. Rocker arm windscreen wiper system mounted on a blade by means of an adapter. 4,622,711, Cl. 15-250.230.

Waugh, George B. Bow facing rowing arrangement. 4,623,314, Cl. 440-104.000.

Wayne, Alex; Bintner, Dennis W.; and Bartel, Mark H., to Delavan Inc. Self-tightening shaft coupler. 4,623,277, Cl. 403-314.000.

Webasto-Werk W. Baier GmbH & Co.: *See*—
Grupa, Johann, 4,622,831, Cl. 62-244.000.

Weber, Guenter: *See*—
Broecker, Franz J.; Duembgen, Gerd; Pies, Wolfgang; Schlichtharle, Gottfried; and Weber, Guenter, 4,623,668, Cl. 518-709.000.

Weber, Karl-Heinz: *See*—
Casals-Stenzel, Jorge; Weber, Karl-Heinz; Walther, Gerhard; Harreus, Albrecht; and Muacevic, Gojko, 4,623,646, Cl. 514-220.000.

Weber, Manfred, to Pyrotechnische Fabrik F. Feistel GmbH & Co. KG. Smoke projectile with sequential charges and central ignitor. 4,622,899, Cl. 102-334.000.

Weber, William R.: *See*—
Harris, Robert W.; and Weber, William R., 4,622,986, Cl. 132-92.00R.

Weeder, Ralph E. Planter population reduction drive unit. 4,623,078, Cl. 222-615.000.

Wegmann & Co. GMBH: *See*—
Blume, Harald; and Wagner, Bodo, 4,623,191, Cl. 279-110.000.

Wegmuller, Hans: *See*—
Bernheim, Michael; Meindl, Hubert; Rohringer, Peter; Wegmuller, Hans; and Werthemann, Dieter, 4,623,428, Cl. 162-158.000.

Wegner, Karl-Heinz: *See*—
Hodes, Erich; and Wegner, Karl-Heinz, 4,623,590, Cl. 428-408.000.

Weiler, Gerhard H.; Anderson, Paul A.; and Pagels, Louis T., to Automatic Liquid Packaging, Inc. Sterilizing method for an encapsulating machine. 4,623,516, Cl. 422-28.000.

Weinblatt, Lee S. Media survey apparatus and method using thermal imagery. 4,623,230, Cl. 351-210.000.

Weitzenhof, David A.; and Sayre, Charles F., to Firestone Tire & Rubber Company, The. Dual trailing arm vehicle suspension system. 4,623,162, Cl. 280-687.000.

Welch, James D. Method and system for controlling access to transmitted modulated electromagnetic wave carried information. 4,623,919, Cl. 358-118.000.

Welles, Kenneth B., II, to General Electric Company. Reconfigurable remote control. 4,623,887, Cl. 340-825.570.

Wells Electronic, Inc.: *See*—
Kerul, Joseph A.; and Ralstin, Donald E., 4,623,208, Cl. 339-74.00R.

Wenker, Ludwig. Internal combustion engine. 4,622,927, Cl. 123-58.00B.

Wenstadt, Thomas D.; and Hagen, Marcus W., to Outboard Marine Corporation. Timing and throttle linkage. 4,622,938, Cl. 123-413.000.

Werthemann, Dieter: *See*—
Bernheim, Michael; Meindl, Hubert; Rohringer, Peter; Wegmuller, Hans; and Werthemann, Dieter, 4,623,428, Cl. 162-158.000.

West, Paul R., to General Electric Company. Photolithographic stripping method for removing contrast enhancement layer. 4,623,611, Cl. 430-329.000.

Westinghouse Electric Corp.: *See*—
Burg, Thomas J., 4,623,269, Cl. 384-548.000.
Dakin, Thomas W., 4,623,953, Cl. 361-315.000.
Draper, Robert; Silvestri, George J., Jr.; and Hargrove, Homer G., 4,622,819, Cl. 60-657.000.
Hudock, John S., 4,623,559, Cl. 427-54.100.
Mackiewicz, Ralph E., 4,623,961, Cl. 364-147.000.
Marchetti, Joseph R.; Sanjana, Zal N.; and Elikan, Edward, 4,623,578, Cl. 428-209.000.
Porembski, Thaddeus T., 4,623,511, Cl. 376-272.000.
Poyser, Thomas D., 4,623,265, Cl. 374-152.000.
Ryan, Frederick M.; and Feldman, Donald W., 4,622,845, Cl. 73-24.000.
Salowe, Seymour; Elms, Robert T.; and Johnson, Richard A., 4,623,949, Cl. 361-63.000.
Schmitz, William E., 4,623,828, Cl. 318-696.000.
Troy, Michael, 4,623,510, Cl. 376-272.000.

Westley, Curtis E., to Honeywell Inc. Stepper motor housing and pole assembly. 4,623,809, Cl. 310-49.00R.

Westmas, Laland D.: *See*—
Brown, John M.; Herritz, Donald W.; Ottinger, Barbara L.; and Westmas, Laland D., 4,623,068, Cl. 215-11.00R.

Westmoreland, Thomas D., Jr.: *See*—
Clampitt, Bert H.; Deysarkar, Asoke K.; and Westmoreland, Thomas D., Jr., 4,623,447, Cl. 208-187.000.

Weyand, John D., to Aluminum Company of America. Connection method. 4,623,555, Cl. 427-34.000.

Whirlpool Corporation: *See*—
Nystuen, Arne M.; and Kuss, John M., 4,623,811, Cl. 310-192.000.

Whistler, Roy L.: *See*—
Chen, Chyi-Cheng; and Whistler, Roy L., 4,623,721, Cl. 536-4.100.

White Chemical Corporation: *See*—
Mischutin, Vladimir, 4,623,583, Cl. 428-242.000.

White, Larry F., to Gates Rubber Company, The. Elastomeric bearing system. 4,623,267, Cl. 384-125.000.

White, Leonard A., to Baxter Travenol Laboratories, Inc. Nipple and nursing container. 4,623,069, Cl. 215-11.00R.

Whynacht, Charles: *See*—
Hall, Robert E.; and Whynacht, Charles, 4,623,040, Cl. 187-29.00R.

Wiard, Maxwell R., to United Aircraft Products, Inc. Heat exchanger with heat transfer control. 4,623,019, Cl. 165-146.000.

Wickramasuriya, Damasius B., to Ford Motor Company. Inlet manifold. 4,622,931, Cl. 123-190.00A.

Wico Corporation: *See*—
Kim, Syng N., 4,623,787, Cl. 250-221.000.

Wiederaufbereitungsanlage Karlsruhe Betriebsgesellschaft mbH: *See*—
Zeh, Horst, 4,623,302, Cl. 417-89.000.

Wiedermann, Rolf: *See*—
Kleinstuck, Roland; and Wiedermann, Rolf, 4,623,672, Cl. 521-108.000.

Wier, Franz, to TRW Repa GmbH. Buckle for a safety belt. 4,622,727, Cl. 24-642.000.

Wier, Jan H. Spacer members. 4,623,127, Cl. 256-35.000.

Wild Heerbrugg AG: *See*—
Stossel, Hans R., 4,623,790, Cl. 250-231.0SE.

Willard, Miles J. Method for preparing extruded fried snack products from corn and other cereal flours. 4,623,548, Cl. 426-559.000.

Willard, Miles J. Method for preparing sheeted fried snack products from corn and other cereal flours. 4,623,550, Cl. 426-559.000.

Williams, John W., to Boeing Company, The. Hydrofoil flap control rod system. 4,622,913, Cl. 114-280.000.

Willis, Donald H.: *See*—
Fling, Russell T.; and Willis, Donald H., 4,623,913, Cl. 358-11.000.

Wills, Kendall S.; and Rodriguez, Paul A., to Texas Instruments Incorporated. Indexing of laser beam for programming VLSI devices. 4,623,403, Cl. 148-33.300.

Wilman, Hugh, to British Library Board, The. Document scanners. 4,623,247, Cl. 355-75.000.

Wilsberg, Heinz-Manfred, to Henkel Kommanditgesellschaft auf Aktien. Aqueous textile washing compositions. 4,623,471, Cl. 252-8.800.

Wilson, James H. No-mortar flashing method and apparatus. 4,623,171, Cl. 285-42.000.

Wilson, Robert M., Jr., to Dare Products, Inc. Fence post insulating cap. 4,623,756, Cl. 174-158.00F.

Wilson, Thomas E. Device for measuring lubricating oil temperature supplied to an internal combustion motorcycle engine. 4,622,851, Cl. 73-292.000.

Win, Maung H.: *See*—
Lloyd, William D.; Win, Maung H.; and Malueg, Dennis E., 4,623,576, Cl. 428-171.000.

Wing, Donald K. Electronic checkbook. 4,623,965, Cl. 364-408.000.

Winston, Anthony E.; Brown, Raymond; Usen, Norman; and Ansaldi, Anthony, to Church & Dwight Co., Inc. Sodium bicarbonate containing toothpaste. 4,623,536, Cl. 424-49.000.

Winter, Walter W.; Gothard, Steven E.; and Drew, John H., to Golden Enterprises, Incorporated. Telephone operator voice storage and retrieval system. 4,623,761, Cl. 379-84.000.

Wischermann, Gerhard, to Robert Bosch GmbH. System for time compression and/or expansion of electrical signals. 4,623,922, Cl. 358-160.000.

Wisecarver, Martin L.: *See*—
Moisson, Marc F.; and Wisecarver, Martin L., 4,623,156, Cl. 279-106.000.

Witt, Wolfram; Lips, Hendrick; Scholler, Herbert; and Schweiger, Raimund, to Rheinmetall GmbH. Exploding missile. 4,622,900, Cl. 102-387.000.

Witt, Wolfram; and Scholles, Herbert, to Rheinmetall GmbH. Warhead. 4,622,901, Cl. 102-476.000.

Witty, Michael J.: *See*—
Gilligan, Paul J.; McGuirk, Paul R.; and Witty, Michael J., 4,623,650, Cl. 514-312.000.

Wizer Equipment, Inc.: *See*—
Laverick, William J., 4,622,896, Cl. 101-416.00R.
Laverick, William J.; and Kendall, George A., 4,622,897, Cl. 101-316.000.

Woestman, John W., to RCA Corporation. System for verifying the position of a movable table. 4,623,879, Cl. 340-686.000.

Wolf, Helmut: *See*—
Maeke, Siegfried; Bauer, Adolf; Vogt, Hubert; and Wolf, Helmut, 4,623,730, Cl. 548-308.000.

Wollenhaupt, Gottfried: *See*—
Abthoff, Jorg; Schuster, Hans-Dieter; Wollenhaupt, Gottfried; Loose, Gunter; and Busch, Michael-Rainer, 4,622,809, Cl. 60-274.000.

Wolrich, Gilbert; McLellan, Edward J.; Yodlowski, Robert; and Dobberpuhl, Daniel, to Digital Equipment Corporation. ALU with carry length detection. 4,623,981, Cl. 364-736.000.

Wong, Nam S.: *See*—
Lee, Kuan M.; Chu, Ruey S.; Wong, Nam S.; Clark, James U.; and Tang, Raymond, 4,623,894, Cl. 343-700.0MS.

Wong, Wan C.; and Oshima, Shigeru, to W. Haking Enterprises Limited. Camera with improved film leader capturing means. 4,623,232, Cl. 354-173.100.

Wood, Russell J. Parallel straightedge. 4,622,755, Cl. 33-444.000.

Woolf, Lawrence D., to GA Technologies Inc. Thermally stabilized superconductors. 4,623,862, Cl. 335-216.000.

Worner, Fritz: *See*—
Bumuller, Lothar; Engelmann, Alfred; Kille, Franz; Maier, Alfred; Scharf, Otto; and Worner, Fritz, 4,622,728, Cl. 26-18.500.

Worthington, Paul A.: *See*—
Parry, Keith P.; Rathmell, William G.; and Worthington, Paul A., 4,623,654, Cl. 514-383.000.

Wozniak, John F.: *See*—
O'Connell, John P.; and Wozniak, John F., 4,623,448, Cl. 208-262.000.

Wozniak, John J., to Johns Hopkins University, The. Vascular everting instrument. 4,622,970, Cl. 128-334.00R.

Wuellenweber, Mary F. Wrist and ankle weights. 4,623,143, Cl. 272-119.000.

Wuerzer, Bruno: *See*—
Jahn, Dieter; Becker, Rainer; Goetz, Norbert; Keil, Michael; and Wuerzer, Bruno, 4,623,381, Cl. 71-94.000.
Wuster, Heinrich. Double-faced webbed panel unit, which is bordered at its edges by sections which abut at an angle to each other. 4,622,797, Cl. 52-785.000.
X-Cyte Inc.: *See*—
Nysen, Paul A., 4,623,890, Cl. 342-44.000.
Xerox Corporation: *See*—
Ciccarelli, Roger N., 4,623,606, Cl. 430-110.000.
Handy, Roland J., 4,623,928, Cl. 358-213.000.
Streifer, William; Scifres, Donald R.; Burnham, Robert D.; and Paoli, Thomas L., 4,624,000, Cl. 372-45.000.
Zambelli, Robert G., 4,623,239, Cl. 355-8.000.
Yabunaka, Kiyoshi: *See*—
Hamano, Isao; Morishita, Akira; Akae, Yoshifumi; Nishimura, Youji; Tanaka, Toshinori; and Yabunaka, Kiyoshi, 4,622,930, Cl. 123-179.00K.
Yaghmaie, Farrokh; Vasconcellos, Stephen R.; and McKeon, Ronald J., to Texaco Inc. Aqueous slurries of solid carbonaceous fuel. 4,623,359, Cl. 44-51.000.
Yahalom, Yona, to Solmat Systems, Ltd. Floating solar pond and associated power plant. 4,622,949, Cl. 126-415.000.
Yakovleva, Ljudmila S.: *See*—
Ivanov, Mikhail G.; Golov, Veniamin G.; Kuzmin, Vladimir N.; Alyakrinskaya, Aida I.; Mushy, Roman Y.; Kovalev, Alexei D.; Shutova, Nadezhda V.; Rodionov, Jury A.; Molev, Igor I.; Yakovleva, Ljudmila S.; Berezin, Vitaly B.; Petrashko, Alexei I.; Shuev, Gennady M.; Bukin, Boris A.; Belkina, Tamara M., deceased; and Belkin, Naum S., administrator, 4,623,731, Cl. 548-374.000.
Yale Security Inc.: *See*—
Trull, Jeffrey G.; and Lampley, Sidney J., 4,623,174, Cl. 292-1.000.
Yamada, Keiichi: *See*—
Nozaki, Shinya; Yamada, Keiichi; and Kushida, Takeo, 4,622,942, Cl. 123-446.000.
Yamada, Minoru; Ito, Eiji; and Nagai, Masaru, to Konishiroku Photo Industry Co., Ltd. Electromagnetically driven shutter device. 4,623,233, Cl. 354-229.000.
Yamada, Shigemichi: *See*—
Ito, Hiroshi; Yamada, Shigemichi; and Akashi, Teruo, 4,622,866, Cl. 74-866.000.
Yamaha Hatsudoki Kabushiki Kaisha: *See*—
Yoshikawa, Masaaki, 4,622,940, Cl. 123-432.000.
Yamakawa, Goichi: *See*—
Takagiwa, Hiroyuki; Thuzita, Kenzi; Yamakawa, Goichi; Tomono, Makoto; Wakimoto, Saburo; Miyahara, Sadayasu; Ishida, Tetsumasa; Hyosu, Yoshihiko; and Wada, Tsuneo, 4,623,604, Cl. 430-109.000.
Yamamoto, Hiroki: *See*—
Fukuo, Koichi; and Yamamoto, Hiroki, 4,622,933, Cl. 123-196.00R.
Yamamoto, Ryoji: *See*—
Iizuka, Kinji; Kamijo, Tetsuhide; Yamamoto, Ryoji; and Harada, Hiromu, 4,623,724, Cl. 544-107.000.
Yamamoto, Ryuzo; Mori, Kihei; Omoto, Yorihiko; Iai, Hidehito; and Kikuchi, Toru, to Teijin Limited. Cushioning member. 4,623,571, Cl. 428-68.000.
Yamamoto, Takashi; and Ishimori, Akira, to Mitsubishi Denki Kabushiki Kaisha. Erroneous impingement protective device for laser system. 4,622,971, Cl. 128-395.000.
Yamamoto, Toshiyuki, to Alps Electric Co., Ltd. Manual paper feed mechanism for printer. 4,623,898, Cl. 346-76.0PH.
Yamanishi, Eiichi, to Kabushiki Kaisha Toshiba. Belt-shaped material conveying apparatus. 4,623,902, Cl. 346-76.0PH.
Yamanouchi, Junichi: *See*—
Yoneyama, Masakazu; Maekawa, Yukio; Yokoyama, Shigeki; and Yamanouchi, Junichi, 4,623,614, Cl. 430-523.000.
Yamasa Shoyu Kabushiki Kaisha: *See*—
Kusakabe, Hitoshi; and Midorikawa, Yuichiro, 4,623,626, Cl. 435-191.000.
Yamase, Yuuji: *See*—
Matsushima, Haruo; and Yamase, Yuuji, 4,623,004, Cl. 139-384.00B.
Yamashita, Ayako, to Upjohn Company, The. Synthesis of precursors of anti-atherosclerotic furochromones. 4,623,737, Cl. 549-471.000.
Yamashita, Tatsumaro, to Alps Electric Co., Ltd. Magnetic tape guide drum with grounding device. 4,623,944, Cl. 360-84.000.
Yamatake Honeywell: *See*—
Akano, Shinichi, 4,623,871, Cl. 340-310.00A.
Yamauchi, Akira: *See*—
Kono, Masao; Komeno, Taichitro; Ishihara, Shoichi; Yamauchi, Akira; and Okabayashi, Tadashi, 4,623,485, Cl. 540-92.000.
Yamazaki, Eiichi, to Hitachi, Ltd. Shadow mask type color picture tube. 4,623,818, Cl. 313-408.000.
Yamazaki, Masayasu: *See*—
Hatano, Hirofumi; Yamazaki, Masayasu; Sasaki, Atsushi; and Mikami, Keigo, 4,623,311, Cl. 432-106.000.
Yamazaki, Shunpei, to Semiconductor Energy Laboratory Co., Ltd. Refining process of reactive gas for forming semiconductor layer. 4,623,369, Cl. 62-11.000.
Yamori, Tsunefumi; Okauchi, Shuki; and Fujioka, Hironari, to Kanzaki Paper Mfg. Co., Ltd. Process for the production of heat-sensitive recording materials. 4,623,557, Cl. 427-44.000.
Yanagihara, Nobuyuki: *See*—
Takeshita, Isao; Yanagihara, Nobuyuki; Gamo, Takaharu; and Moriwaki, Yoshio, 4,623,018, Cl. 165-104.120.
Yanagisawa, Gennai: *See*—
Aoki, Seiji; and Yanagisawa, Gennai, 4,622,801, Cl. 53-429.000.
Yanmar Diesel Engine Co., Ltd.: *See*—
Nishimura, Akira; Yoshii, Masami; and Yasui, Shigeharu, 4,622,923, Cl. 123-2.000.
Yarmchuk, Edward J.: *See*—
Kaschak, Ronald A.; Magnuson, Roy H.; and Yarmchuk, Edward J., 4,623,554, Cl. 427-8.000.
Yasui, Shigeharu: *See*—
Nishimura, Akira; Yoshii, Masami; and Yasui, Shigeharu, 4,622,923, Cl. 123-2.000.
Yasukawa, Takemasa: *See*—
Sugita, Hiroshi; Yasukawa, Takemasa; and Aritake, Masanori, 4,622,712, Cl. 15-250.360.
Yasuoka, Hidenori: *See*—
Handa, Masao; Ueki, Mikio; Tokuya, Tomohiko; Hori, Mitsuaki; Yasuoka, Hidenori; Sato, Toshio; Ichihara, Takuzo; and Toyama, Kenichi, 4,623,173, Cl. 285-333.000.
Yeager, Marvin L.: *See*—
Feldman, Steven; and Yeager, Marvin L., 4,623,753, Cl. 174-50.000.
Yeung, David: *See*—
Gans, Eugene; Nacht, Sergio; and Yeung, David, 4,623,667, Cl. 514-762.000.
Ying, Wei-chi; and Sojka, Stanley A., to Occidental Chemical Corporation. Removal of dioxins, PCB's and other halogenated organic compounds from wastewater. 4,623,464, Cl. 210-616.000.
Yodlowski, Robert: *See*—
Wolrich, Gilbert; McLellan, Edward J.; Yodlowski, Robert; and Dobberpuhl, Daniel, 4,623,981, Cl. 364-736.000.
Yokogawa, Atsushi: *See*—
Miyagaki, Hisanori; Higashi, Toshihiko; Yokogawa, Atsushi; Shimada, Yoshihiro; Kurihara, Nobuo; Nishikawa, Mitsuyo; Sato, Yoshio; Watanabe, Atsumi; and Morooka, Yasuo, 4,622,922, Cl. 122-449.000.
Yokogawa Hokushin Electric Corporation: *See*—
Inoue, Yuji; and Iwaoka, Hideto, 4,623,864, Cl. 335-299.000.
Yokogawa Medical Systems, Ltd.: *See*—
Inoue, Yuji; and Iwaoka, Hideto, 4,623,864, Cl. 335-299.000.
Yokokawa, Hidemi; Murooka, Rikichi; Fukuzawa, Miyuki; and Tomioka, Machiko, to Sony/Tektronix Corporation. Logic analyzer having search and comparison capabilities. 4,623,984, Cl. 364-900.000.
Yokoo, Koji: *See*—
Inoue, Yoshio; Okami, Takehide; Yokoo, Koji; and Kinami, Hitoshi, 4,623,693, Cl. 524-700.000.
Yokote, Yoshihiro, to NSK-Warner K.K. Automatic seat belt system. 4,623,168, Cl. 280-804.000.
Yokoyama, Shigeki; and Sekiguchi, Nobuhisa, to Fuji Photo Film Co., Ltd. Silver halide photographic light-sensitive materials. 4,623,615, Cl. 430-527.000.
Yokoyama, Shigeki: *See*—
Yoneyama, Masakazu; Maekawa, Yukio; Yokoyama, Shigeki; and Yamanouchi, Junichi, 4,623,614, Cl. 430-523.000.
Yoneyama, Masakazu; Maekawa, Yukio; Yokoyama, Shigeki; and Yamanouchi, Junichi, to Fuji Photo Film Co., Ltd. Silver halide photographic light-sensitive materials. 4,623,614, Cl. 430-523.000.
Yonezawa, Kazuya: *See*—
Takase, Junji; Yonezawa, Kazuya; and Takamatu, Osamu, 4,623,710, Cl. 528-176.000.
Yong, Samuel: *See*—
Wallin, Glenn; Rosenwald, Diane; Citti, James; and Yong, Samuel, 4,623,542, Cl. 426-94.000.
York Trailer Company Limited: *See*—
Stead, Brian, 4,623,189, Cl. 296-181.000.
Yoshida, Hiromi; Miyamura, Masataka; Funakoshi, Katsumi; and Nagano, Riichiro, to Tokyo Shibaura Denki Kabushiki Kaisha; and Mitsui Petrochemical Industries, Ltd. Positive image-forming method using 4-methyl-1-pentene polymer. 4,623,610, Cl. 430-326.000.
Yoshida, Keiichiro. Method of forming long metal tubing to tapered shape. 4,622,841, Cl. 72-367.000.
Yoshida Kogyo K. K.: *See*—
Matsushima, Haruo; and Yamase, Yuuji, 4,623,004, Cl. 139-384.00B.
Yoshida, Kunio: *See*—
Morimoto, Masafumi; Yoshida, Kunio; and Nakanishi, Tosaku, 4,623,985, Cl. 364-900.000.
Yoshida, Naoyuki: *See*—
Ogawa, Tetsuya; Goto, Yasuyuki; Kitano, Kisei; and Yoshida, Naoyuki, 4,623,477, Cl. 252-299.500.
Yoshida, Tadahiro: *See*—
Kashiwamura, Kazuo; Yoshida, Tadahiro; Koda, Toshihide; and Fujiwara, Michio, 4,623,151, Cl. 277-24.000.
Yoshii, Masami: *See*—
Nishimura, Akira; Yoshii, Masami; and Yasui, Shigeharu, 4,622,923, Cl. 123-2.000.
Yoshikawa, Junichi, to Canon Kabushiki Kaisha. Linear motor. 4,623,806, Cl. 310-12.000.
Yoshikawa, Masaaki, to Yamaha Hatsudoki Kabushiki Kaisha. Porting arrangement for internal combustion engine. 4,622,940, Cl. 123-432.000.
Yoshikawa, Ryoichi: *See*—
Ikenaga, Osamu; and Yoshikawa, Ryoichi, 4,623,256, Cl. 356-394.000.
Yoshikawa, Yasuhiko: *See*—
Irie, Yoichiro; Kimura, Hiroshi; Hisajima, Masahiko; Shibata, Kiyoshi; and Yoshikawa, Yasuhiko, 4,623,137, Cl. 271-160.000.

Young, Dean A., to Union Oil Company of California. Shock calcined aluminosilicate zeolites. 4,623,633, Cl. 502-85.000.

Young, Dean A., to Union Oil Company of California. Shock calcined crystalline silica catalysts. 4,623,636, Cl. 502-232.000.

Yu, Francis T. S., to United States of America, Air Force. System of white-light density pseudocolor encoding with three primary colors. 4,623,245, Cl. 355-32.000.

Zach, Joachim: *See*—
Rose, Harald; and Zach, Joachim, 4,623,794, Cl. 250-396.00R.

Zahalka, Pavel; Stanek, Jaroslav; and Matej, Jiri , to Vysoka skola chemicko-technologicka. Circuit arrangement for decreasing the corrosion of the electrodes in a furnace for the electric melting of vitreous material. 4,624,002, Cl. 373-40.000.

Zambelli, Robert G., to Xerox Corporation. Optical scanning system. 4,623,239, Cl. 355-8.000.

Zaruba, John V.; Meyer, Burton C.; Lindsay, Robert L.; and Oppenheim, Michael J., to Marvin Glass & Associates. Figure including extrusion means actuated by figure appendages. 4,623,319, Cl. 446-373.000.

Zatezalo, John M.; and Spalla, Lucian J., to Industrial Maintenance Systems, Inc. Method and calculator for determining offset and angularity of coupled shafts. 4,623,979, Cl. 364-715.000.

Zaweski, Edward F.; and Niebylski, Leonard M., to Ethyl Corporation. Fuel compositions. 4,623,360, Cl. 44-57.000.

Zaweski, Edward F.; and Niebylski, Leonard M., to Ethyl Corporation. Fuel compositions. 4,623,361, Cl. 44-57.000.

Zaweski, Edward F.; and Niebylski, Leonard M., to Ethyl Corporation. Fuel compositions. 4,623,362, Cl. 44-57.000.

Zaweski, Edward F.; and Niebylski, Leonard M., to Ethyl Corporation. Fuel compositions. 4,623,363, Cl. 44-57.000.

Zechnall, Martin: *See*—
Denz, Helmut; Etzold, Peter; Groschel, Wolfgang; Kaiser, Gunther; Kraemer, Heinz; Nitschke, Werner; and Zechnall, Martin, 4,623,974, Cl. 364-551.000.

Zecman, Kenneth P. Shot sleeve. 4,623,015, Cl. 164-312.000.

Zeh, Horst, to Wiederaufbereitungsanlage Karlsruhe Betriebsgesellschaft mbH. Arrangement for facilitating the start-up of not self-priming centrifugal pumps. 4,623,302, Cl. 417-89.000.

Zeroni, Ludwig: *See*—
Pertzsch, Albert; Brunner, Hubert; and Zeroni, Ludwig, 4,623,105, Cl. 242-198.000.

Ziatdinov, Mansur K.: *See*—
Maximov, Jury M.; Ziatdinov, Mansur K.; Kolmakov, Anatoly D.; Raskolenko, Larisa G.; Merzhanov, Alexandr G.; Borovinskaya, Inna P.; and Dubovitsky, Fedor I., 4,623,402, Cl. 148-20.300.

Ziatyk, Daniel: *See*—
Hsiue, Eric S.; Ziatyk, Daniel; Stone, George R.; and DeBona, Bruce T., 4,623,577, Cl. 428-209.000.

Ziegler, Friedrich: *See*—
Krieg, Rudolf; Ziegler, Friedrich; and Bierbauer, Franz-Josef, 4,623,815, Cl. 313-113.000.

Zimmer, Robert E.: *See*—
Nelson, James A.; and Zimmer, Robert E., 4,623,500, Cl. 264-162.000.

Zimmerly, Harold L. Chain door lock. 4,623,180, Cl. 292-264.000.

Zimmerman, Morris: *See*—
Doherty, James B.; Ashe, Bonnie M.; Finke, Paul E.; Firestone, Raymond A.; Shah, Shrenik K.; and Zimmerman, Morris, 4,623,645, Cl. 514-200.000.

Zlotski, William J., to HR Textron Inc. Check valve retainer. 4,622,989, Cl. 137-315.000.

Zuber, Bretislav P.: *See*—
Dubreuil, Luc T.; Pouliot, Gaston D.; Cote, Gerard G.; Larouche, Rejean; and Zuber, Bretislav P., 4,622,741, Cl. 29-858.000.

Zulkowitz, Albert J., to A. Zulkowitz Associates. Method and apparatus for making fuel elements from newspaper sheets or the like. 4,623,324, Cl. 493-462.000.

501 Hergeth Hollingsworth GmbH: *See*—
Vosbein, Gerd; and Hergeth, Hubert, 4,623,099, Cl. 241-101.00A.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 18TH DAY OF NOVEMBER, 1986

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

AMP Incorporated: *See—*
Asick, John C. D.; Douty, George H.; Landis, John M.; Snyder, Clair W., Jr.; and Staron, James S., Re. 32,290, Cl. 339-17.0LC.

Asick, John C. D.; Douty, George H.; Landis, John M.; Snyder, Clair W., Jr.; and Staron, James S., to AMP Incorporated. Input/output intercard connector. Re. 32,290, Cl. 339-17.0LC.

Berger, Bernard B., to Ducane Heating Corporation. Heat trapping cooking grill. Re. 32,288, Cl. 99-385.000.

Douty, George H.: *See—*
Asick, John C. D.; Douty, George H.; Landis, John M.; Snyder, Clair W., Jr.; and Staron, James S., Re. 32,290, Cl. 339-17.0LC.

Ducane Heating Corporation: *See—*
Berger, Bernard B., Re. 32,288, Cl. 99-385.000.

Kokusai Denshin Denwa Kabushiki Kaisha: *See—*
Nakagome, Yukio; Teramura, Hiroichi; Yamasaki, Yasuhiro; and Wakahara, Yasushi, Re. 32,291, Cl. 358-261.000.

Landis, John M.: *See—*
Asick, John C. D.; Douty, George H.; Landis, John M.; Snyder, Clair W., Jr.; and Staron, James S., Re. 32,290, Cl. 339-17.0LC.

Nakagome, Yukio; Teramura, Hiroichi; Yamasaki, Yasuhiro; and Wakahara, Yasushi, to Kokusai Denshin Denwa Kabushiki Kaisha. System for coding information change picture elements in facsimile signal. Re. 32,291, Cl. 358-261.000.

Phillips Petroleum Company: *See—*
Stapp, Paul R., Re. 32,289, Cl. 166-273.000.

Snyder, Clair W., Jr.: *See—*
Asick, John C. D.; Douty, George H.; Landis, John M.; Snyder, Clair W., Jr.; and Staron, James S., Re. 32,290, Cl. 339-17.0LC.

Stapp, Paul R., to Phillips Petroleum Company. Cyanohydrocarbylated alkoxylates and glycerides. Re. 32,289, Cl. 166-273.000.

Staron, James S.: *See—*
Asick, John C. D.; Douty, George H.; Landis, John M.; Snyder, Clair W., Jr.; and Staron, James S., Re. 32,290, Cl. 339-17.0LC.

Teramura, Hiroichi: *See—*
Nakagome, Yukio; Teramura, Hiroichi; Yamasaki, Yasuhiro; and Wakahara, Yasushi, Re. 32,291, Cl. 358-261.000.

Wakahara, Yasushi: *See—*
Nakagome, Yukio; Teramura, Hiroichi; Yamasaki, Yasuhiro; and Wakahara, Yasushi, Re. 32,291, Cl. 358-261.000.

Willis, John R. Protective football glove. Re. 32,287, Cl. 2-16.000.

Yamasaki, Yasuhiro: *See—*
Nakagome, Yukio; Teramura, Hiroichi; Yamasaki, Yasuhiro; and Wakahara, Yasushi, Re. 32,291, Cl. 358-261.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Beckestrom, Bo, to Landstingens Inkopscentral, LIC, ekonomisk forening. Protector against incontinence or diaper. B1 4,490,148, 11-18-86, Cl. 604-385.200.

Landstingens Inkopscentral, LIC, ekonomisk forening: *See—*
Beckestrom, Bo, B1 4,490,148, Cl. 604-385.200.

Obiaya, Joseph O. Combustible element and oxygen concentration sensor. B1 4,128,458, 11-18-86, Cl. 204-427.000.

LIST OF DESIGN PATENTEES

Adams, John S. Base for a fireplace tool support. 286,713, 11-18-86, Cl. D6-416.000.

AE PLC: *See—*
Collyear, John G.; and Parker, David A., 286,780, Cl. D15-5.000.
Collyear, John G.; and Parker, David A., 286,781, Cl. D15-5.000.

Ahlberg, Lennart. Physiological exerciser. 286,802, 11-18-86, Cl. D21-191.000.

Allied Corporation: *See—*
Gallusser, David O.; MacAvoy, David W.; Frear, David L.; and Punako, Stephen, 286,766, Cl. D13-24.000.

Amaya, Armando: *See—*
Bayless, Gary L.; and Amaya, Armando, 286,794, Cl. D20-41.000.

American Commercial, Incorporated: *See—*
Everhan, Walter, 286,723, Cl. D7-9.000.
Laslo, Larry R., 286,722, Cl. D7-5.000.

Anderson, Susan; and Boxwell, Audrey A., to St. Louis Creek Trading Company. Doll. 286,801, 11-18-86, Cl. D21-166.000.

Bali Company: *See—*
Martini, Jeanne M., 286,701, Cl. D2-24.000.
Martini, Jeanne M., 286,702, Cl. D2-24.000.

Bayless, Gary L.; and Amaya, Armando, to Harben, Vertner H., III, a part interest. Sign. 286,794, 11-18-86, Cl. D20-41.000.

Beaumont, Thomas G., to Motorola, Inc. Vehicular handset telephone control unit or similar article. 286,778, 11-18-86, Cl. D14-64.000.

Bethea, Malcolm S. Combined thimble nut and washer. 286,744, 11-18-86, Cl. D8-397.000.

Bishop, Oliver H. S., to STC plc. Telephone base with dialing means. 286,777, 11-18-86, Cl. D14-62.000.

Black & Decker Inc.: *See—*
House, Lawrence E., II; Somers, Robert I.; and Dziedzic, John M., 286,737, Cl. D8-62.000.
McCloskey, Don R., 286,706, Cl. D4-102.000.
Somers, Robert I., 286,736, Cl. D8-62.000.
Somers, Robert I., 286,782, Cl. D15-7.000.

Blatherwick, William J.: *See—*
Hamilton, Leslie; Holewinski, Robert D.; and Blatherwick, William J., 286,750, Cl. D9-423.000.

Bonsack Baths (London) Limited: *See—*
Griffiths, William H., 286,808, Cl. D23-55.000.
Griffiths, William H., 286,809, Cl. D23-55.000.

Booker, Brian A. J., to Parker Pen Company, The. Fountain pen. 286,791, 11-18-86, Cl. D19-51.000.

Borsh, Richard J.; Ripley, Robert W.; and Pate, Harold T., to TBG Inc. Electrical outlet box. 286,768, 11-18-86, Cl. D13-30.000.

Bove, Pierre, to Interdica S.A. Writing instrument. 286,790, 11-18-86, Cl. D19-50.000.

Boxwell, Audrey A.: *See—*
Anderson, Susan; and Boxwell, Audrey A., 286,801, Cl. D21-166.000.

Brainard, Edward C., II; Chute, Russell N.; and Fortin, Mark A. Acoustic otoscope. 286,814, 11-18-86, Cl. D24-17.000.

Brine, William H., Jr., to W. H. Brine Co. Lacrosse stick head. 286,803, 11-18-86, Cl. D21-210.000.

Bristol-Myers Company: *See—*
Graumann, Robert J., 286,815, Cl. D24-21.000.

Britz, Elizabeth A. Invalid chair. 286,762, 11-18-86, Cl. D12-128.000.

Brunner, Merlin A.; and Draheim, Harvey J., to Simmons Universal Corporation. Crib footboard. 286,718, 11-18-86, Cl. D6-505.000.

Bulgari, Marina, to Marina B. Creation, S.A. Earring. 286,758, 11-18-86, Cl. D11-43.000.

B.V. Briefhouder-eu Papierwarenfabriek PAS: *See—*
Verholt, Johannes M., 286,714, Cl. D6-446.000.

Cautereels, Victor J. J.: *See*—
Daenen, Robert H. C. M.; and Cautereels, Victor J. J., 286,726, Cl. D7-23.000.
Chavooshian, J. Dean, to J. Dean Chavooshian, Inc. Condiment shaker. 286,727, 11-18-86, Cl. D7-54.000.
Chute, Russell N.: *See*—
Brainard, Edward C., II; Chute, Russell N.; and Fortin, Mark A., 286,814, Cl. D24-17.000.
Cidelcem, S.A.: *See*—
Tzifkansky, Guy; and Marchais, Jean-Claude, 286,729, Cl. D7-76.000.
Tzifkansky, Guy; and Marchais, Jean-Claude, 286,730, Cl. D7-81.000.
Clauss, Robert E. Trap holder. 286,741, 11-18-86, Cl. D8-373.000.
Cohen, Elaine. Panel connector. 286,743, 11-18-86, Cl. D8-394.000.
Cohn, Robert J., to Metropolitan Wire Corporation. Mobile food cabinet. 286,819, 11-18-86, Cl. D34-19.000.
Collyear, John G.; and Parker, David A., to AE PLC. Piston. 286,780, 11-18-86, Cl. D15-5.000.
Collyear, John G.; and Parker, David A., to AE PLC. Piston. 286,781, 11-18-86, Cl. D15-5.000.
Cosden Technology, Inc.: *See*—
Fortuna, Vincent E., 286,748, Cl. D9-389.000.
Fortuna, Vincent E., 286,749, Cl. D9-389.000.
Craven, Wayne E.: *See*—
Gamble, Christopher L.; and Craven, Wayne E., 286,746, Cl. D9-302.000.
Daenen, Robert H. C. M.; and Cautereels, Victor J. J., to Dart Industries Inc. Bowl. 286,726, 11-18-86, Cl. D7-23.000.
Dahlke, William R. Combined proofing and dough raising tray. 286,733, 11-18-86, Cl. D7-357.000.
Darnell, Arne P., to Hammarplast AB. Vacuum jug. 286,732, 11-18-86, Cl. D7-319.000.
Dart Industries Inc.: *See*—
Daenen, Robert H. C. M.; and Cautereels, Victor J. J., 286,726, Cl. D7-23.000.
Zieff, Mark P., 286,725, Cl. D7-14.000.
Data Grip, Inc.: *See*—
Schriner, Michael J., 286,715, Cl. D6-462.000.
Davis, Robert P.: *See*—
Katz, Ira R.; and Davis, Robert P., 286,703, Cl. D3-52.000.
Katz, Ira R.; and Davis, Robert P., 286,704, Cl. D3-71.000.
de Gelder, Jacob: *See*—
Jennison, James M.; and de Gelder, Jacob, 286,805, Cl. D23-6.000.
Designs for Vision, Inc.: *See*—
Feinbloom, Richard E.; Levine, Melvin; and Yee, Lung T., 286,787, Cl. D16-130.000.
Diamond, Harvey E. Dual seated bathtub. 286,811, 11-18-86, Cl. D23-55.000.
Draheim, Harvey J.: *See*—
Brunner, Merlin A.; and Draheim, Harvey J., 286,718, Cl. D6-505.000.
Drazen, Alan, to Simco Sales Service of Pennsylvania, Inc. Ice cream sandwich. 286,700, 11-18-86, Cl. D1-102.000.
Drazen, Alan S., to Simco Sales Service of Pennsylvania. Ice cream sandwich. 286,731, 11-18-86, Cl. D1-101.000.
Dream Sogo Kenkyusho: *See*—
Yosimoto, Kenichirou, 286,717, Cl. D6-505.000.
Drummond, Desmond C., to Drummond, Desmond C. Purging pump for plumbing systems. 286,806, 11-18-86, Cl. D23-15.000.
Dziedzic, John M.: *See*—
House, Lawrence E., II; Somers, Robert I.; and Dziedzic, John M., 286,737, Cl. D8-62.000.
E. H. Ashley & Company, Inc.: *See*—
Klier, Kurt; and Klier, Heinz, 286,757, Cl. D11-18.000.
Ebihara, Yoshiyuki, to Etona Co., Ltd. Stapler. 286,735, 11-18-86, Cl. D8-50.000.
Eisenstadt, Thomas P.: *See*—
Geis, Eric H.; Eisenstadt, Thomas P.; Kauffman, Kurt; and Lee, Robert E., 286,774, Cl. D14-56.000.
Elmore, James N. Bulk food dispenser. 286,728, 11-18-86, Cl. D7-76.000.
Engel, Hartmut S., to 501 Brillantleuchten AG. Desk lamp. 286,818, 11-18-86, Cl. D26-62.000.
Eriksson, Lars. Battery terminal post clamp. 286,767, 11-18-86, Cl. D13-24.000.
Etona Co., Ltd.: *See*—
Ebihara, Yoshiyuki, 286,735, Cl. D8-50.000.
Everhan, Walter, to American Commercial, Incorporated. Cup. 286,723, 11-18-86, Cl. D7-9.000.
Feinbloom, Richard E.; Levine, Melvin; and Yee, Lung T., to Designs for Vision, Inc. Optical coupler for coupling a television camera to a surgical headband. 286,787, 11-18-86, Cl. D16-130.000.
Ferdinand, Irwin J., to Hirsh Company. Side panel for a shelf unit. 286,719, 11-18-86, Cl. D6-511.000.
Fisher, Robert C., to Quaker Oats Company, The. Toy truck. 286,799, 11-18-86, Cl. D21-140.000.
Forbes, Hampton E., Jr., to Westvaco Corporation. Packaging tray for food or the like. 286,745, 11-18-86, Cl. D9-416.000.
Fortin, Mark A.: *See*—
Brainard, Edward C., II; Chute, Russell N.; and Fortin, Mark A., 286,814, Cl. D24-17.000.
Fortuna, Vincent E., to Cosden Technology, Inc. Packaging container. 286,748, 11-18-86, Cl. D9-389.000.
Fortuna, Vincent E., to Cosden Technology, Inc. Packaging container. 286,749, 11-18-86, Cl. D9-389.000.
Foster, Donald A. Desk novelty, novelty plaque or similar article. 286,792, 11-18-86, Cl. D19-75.000.
Fratelli Guzzini S.p.A.: *See*—
Minuti, Furio, 286,720, Cl. D6-521.000.
Frear, David L.: *See*—
Gallusser, David O.; MacAvoy, David W.; Frear, David L.; and Punako, Stephen, 286,766, Cl. D13-24.000.
Furman, Donald D., to Ozburn-Janesville Corporation. Pill bottle opener. 286,734, 11-18-86, Cl. D8-41.000.
Gallusser, David O.; MacAvoy, David W.; Frear, David L.; and Punako, Stephen, to Allied Corporation. Electrical connector housing. 286,766, 11-18-86, Cl. D13-24.000.
Gamble, Christopher L.; and Craven, Wayne E. Dispensing container. 286,746, 11-18-86, Cl. D9-302.000.
Gasser, Ruth, to Promade SA. Armchair. 286,710, 11-18-86, Cl. D6-368.000.
Geis, Eric H.; Eisenstadt, Thomas P.; Kauffman, Kurt; and Lee, Robert E., to TeleQuest, Inc. Wall telephone. 286,774, 11-18-86, Cl. D14-56.000.
General Foods Corporation: *See*—
Kostanecki, Andrew T., 286,747, Cl. D9-302.000.
Gepner, Isadore; and Shaw, Arthur W., to Pittway Corporation. Foil takeoff switch or similar article. 286,769, 11-18-86, Cl. D13-32.000.
Gioielleria Manfredi snc: *See*—
Manfredi, Giulio, 286,754, Cl. D10-39.000.
Manfredi, Giulio, 286,755, Cl. D10-39.000.
Glaxo Group Limited: *See*—
Newell, Robert E., 286,816, Cl. D24-62.000.
Gohrig, Gerhard. Combined standard and bracket for wall mounted shelves. 286,742, 11-18-86, Cl. D8-381.000.
Goodrich, Ronald W.: *See*—
Prouty, Robert E.; and Goodrich, Ronald W., 286,765, Cl. D13-12.000.
Graumann, Robert J., to Bristol-Myers Company. Blood vessel monitor. 286,815, 11-18-86, Cl. D24-21.000.
Greene, Robert L. Baby bath. 286,810, 11-18-86, Cl. D23-52.000.
Griffiths, William H., to Bonsack Baths (London) Limited. Bathtub. 286,808, 11-18-86, Cl. D23-55.000.
Griffiths, William H., to Bonsack Baths (London) Limited. Bathtub. 286,809, 11-18-86, Cl. D23-55.000.
Gudin, Irving L. Key lock mount for telephone. 286,775, 11-18-86, Cl. D14-59.000.
Hagedorn, Leonhard; and Schulein, Rolf-Gunter, to Leifheit AG. Rack for scissors. 286,721, 11-18-86, Cl. D6-553.000.
Hamilton, Leslie; Holewinski, Robert D.; and Blatherwick, William J., to Johnson & Johnson Dental Products Company. Bottle. 286,750, 11-18-86, Cl. D9-423.000.
Hamilton Standard Controls, Inc.: *See*—
Prouty, Robert E.; and Goodrich, Ronald W., 286,765, Cl. D13-12.000.
Hammarplast AB: *See*—
Darnell, Arne P., 286,732, Cl. D7-319.000.
Hara, Kunio: *See*—
Okuyama, Tooru; and Hara, Kunio, 286,785, Cl. D16-31.000.
Sutoh, Shigeru; Okuyama, Tooru; and Hara, Kunio, 286,779, Cl. D14-109.000.
Harben, Vertner H., III: *See*—
Bayless, Gary L.; and Amaya, Armando, 286,794, Cl. D20-41.000.
Heinson, R. Scott. Adjustable lounge seat or similar article. 286,708, 11-18-86, Cl. D6-361.000.
Hirsh Company: *See*—
Ferdinand, Irwin J., 286,719, Cl. D6-511.000.
Holbrook, James H. Boat seat pedestal. 286,716, 11-18-86, Cl. D6-496.000.
Holewinski, Robert D.: *See*—
Hamilton, Leslie; Holewinski, Robert D.; and Blatherwick, William J., 286,750, Cl. D9-423.000.
Holmgren, Bertil: *See*—
Lundgren, Alvar; Lundgren, Anders; and Holmgren, Bertil, 286,759, Cl. D11-164.000.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Ooba, Yasuhiro; Saito, Kazuhiko; and Yamamoto, Mitsuru, 286,760, Cl. D12-87.000.
Tamura, Gen; Watanabe, Akira; and Kawaguchi, Yukinori, 286,761, Cl. D12-110.000.
Honeywell Inc.: *See*—
Pauser, Rodney M., 286,773, Cl. D14-52.000.
House, Lawrence E., II; Somers, Robert I.; and Dziedzic, John M., to Black & Decker Inc. Belt sander. 286,737, 11-18-86, Cl. D8-62.000.
Hsieh, Hsien-Chang. Combined compass and digital clock or the like. 286,751, 11-18-86, Cl. D10-2.000.
I.C.A. S.p.A. Industria Componenti per l'Architettura: *See*—
Zanuso, Marco, 286,817, Cl. D25-16.000.
Interdica S.A.: *See*—
Bove, Pierre, 286,790, Cl. D19-50.000.
International Business Machines Corporation: *See*—
Wittner, Ernest, 286,712, Cl. D6-407.000.
J. Dean Chavooshian, Inc.: *See*—
Chavooshian, J. Dean, 286,727, Cl. D7-54.000.
Jarrett Systems, Inc.: *See*—
Jarrett, Tracy C., 286,784, Cl. D15-123.000.
Jarrett, Tracy C., to Jarrett Systems, Inc. Compression molding press for mounting metallurgical specimens. 286,784, 11-18-86, Cl. D15-123.000.
Jennison, James M.; and de Gelder, Jacob, to Thompson Manufacturing Company. Sprinkler. 286,805, 11-18-86, Cl. D23-6.000.

Johnson & Johnson Dental Products Company: *See*—
Hamilton, Leslie; Holewinski, Robert D.; and Blatherwick, William J., 286,750, Cl. D9-423.000.
Johnson, William M., to Ralph McKay Limited. Agricultural implement. 286,783, 11-18-86, Cl. D15-29.000.
Kabushiki Kaisha Toshiba: *See*—
Okuyama, Tooru; and Hara, Kunio, 286,785, Cl. D16-31.000.
Sutoh, Shigeru; Okuyama, Tooru; and Hara, Kunio, 286,779, Cl. D14-109.000.
Karapetian, Vahe. Truck canopy. 286,763, 11-18-86, Cl. D12-156.000.
Katz, Ira R.; and Davis, Robert P., to Lenox, Inc. Tote bag. 286,703, 11-18-86, Cl. D3-52.000.
Katz, Ira R.; and Davis, Robert P., to Lenox, Inc. Tote bag. 286,704, 11-18-86, Cl. D3-71.000.
Kauffman, Kurt: *See*—
Geis, Eric H.; Eisenstadt, Thomas P.; Kauffman, Kurt; and Lee, Robert E., 286,774, Cl. D14-56.000.
Kawaguchi, Yukinori: *See*—
Tamura, Gen; Watanabe, Akira; and Kawaguchi, Yukinori, 286,761, Cl. D12-110.000.
Klier, Heinz: *See*—
Klier, Kurt; and Klier, Heinz, 286,757, Cl. D11-18.000.
Klier, Kurt; and Klier, Heinz, to E. H. Ashley & Company, Inc. Link chain. 286,757, 11-18-86, Cl. D11-18.000.
Knoll International, Inc.: *See*—
Schultz, Moses R., 286,709, Cl. D6-361.000.
Koppens, Leonardus P. Display unit for use with cash register systems. 286,788, 11-18-86, Cl. D18-4.000.
Kostanecki, Andrew T., to General Foods Corporation. Combined packaging and dispensing container for extrusible comestibles. 286,747, 11-18-86, Cl. D9-302.000.
Krober, Lutz. Combined toy puzzle and puzzle pieces therefor. 286,798, 11-18-86, Cl. D21-104.000.
Larsson, Arne, to Svagstroms Montage HB. Protective cover for low voltage equipment. 286,739, 11-18-86, Cl. D8-353.000.
Larsson, Arne, to Svagstroms Montage HB. Protective cover for low voltage equipment. 286,740, 11-18-86, Cl. D8-353.000.
Laslo, Larry R., to American Commercial, Incorporated. Snack bowl. 286,722, 11-18-86, Cl. D7-5.000.
Lee, Robert E.: *See*—
Geis, Eric H.; Eisenstadt, Thomas P.; Kauffman, Kurt; and Lee, Robert E., 286,774, Cl. D14-56.000.
Leifheit AG: *See*—
Hagedorn, Leonhard; and Schulein, Rolf-Gunter, 286,721, Cl. D6-553.000.
Lenox, Inc.: *See*—
Katz, Ira R.; and Davis, Robert P., 286,703, Cl. D3-52.000.
Katz, Ira R.; and Davis, Robert P., 286,704, Cl. D3-71.000.
Levine, Melvin: *See*—
Feinbloom, Richard E.; Levine, Melvin; and Yee, Lung T., 286,787, Cl. D16-130.000.
Loring, John R., to Tiffany and Company. Wrist watch case. 286,753, 11-18-86, Cl. D10-39.000.
Lucko, Leon. Sharpener for ice skate blades. 286,738, 11-18-86, Cl. D8-91.000.
Lundgren, Alvar; Lundgren, Anders; and Holmgren, Bertil, to Renovo Konsult AB. Support plate for potted plants. 286,759, 11-18-86, Cl. D11-164.000.
Lundgren, Anders: *See*—
Lundgren, Alvar; Lundgren, Anders; and Holmgren, Bertil, 286,759, Cl. D11-164.000.
MacAvoy, David W.: *See*—
Gallusser, David O.; MacAvoy, David W.; Frear, David L.; and Punako, Stephen, 286,766, Cl. D13-24.000.
Manfredi, Giulio, to Gioielleria Manfredi snc. Wrist watch. 286,754, 11-18-86, Cl. D10-39.000.
Manfredi, Giulio, to Gioielleria Manfredi snc. Wrist watch. 286,755, 11-18-86, Cl. D10-39.000.
Marchais, Jean-Claude: *See*—
Tzifkansky, Guy; and Marchais, Jean-Claude, 286,729, Cl. D7-76.000.
Tzifkansky, Guy; and Marchais, Jean-Claude, 286,730, Cl. D7-81.000.
Marina B. Creation, S.A.: *See*—
Bulgari, Marina, 286,758, Cl. D11-43.000.
Martini, Jeanne M., to Bali Company. Brassiere. 286,701, 11-18-86, Cl. D2-24.000.
Martini, Jeanne M., to Bali Company. Brassiere. 286,702, 11-18-86, Cl. D2-24.000.
Maruyama, Masaki, to Takara Co., Ltd. Reconfigurable toy hawk. 286,800, 11-18-86, Cl. D21-160.000.
McCarthy, Kevin I. Swim fin. 286,804, 11-18-86, Cl. D21-239.000.
McCloskey, Don R., to Black & Decker, Inc. Cordless shoe polisher. 286,706, 11-18-86, Cl. D4-102.000.
Melcher, Domenic. Casing of an electrical or electronic device. 286,770, 11-18-86, Cl. D13-40.000.
Menke, W. Kenneth; and Wagner, Thomas E., to Public Safety Equipment, Inc. Combined light and speaker housing for emergency vehicles. 286,756, 11-18-86, Cl. D10-114.000.
Metropolitan Wire Corporation: *See*—
Cohn, Robert J., 286,819, Cl. D34-19.000.
Miles, Richard, to Samsonite Corporation. Case. 286,705, 11-18-86, Cl. D3-72.000.
Minuti, Furio, to Fratelli Guzzini S.p.A. Vertical paper roll holder. 286,720, 11-18-86, Cl. D6-521.000.
Motorola, Inc.: *See*—
Beaumont, Thomas G., 286,778, Cl. D14-64.000.
Mulkey-Hartis, Judy. Oil well pump riding toy. 286,797, 11-18-86, Cl. D21-66.000.
Newell, Robert E., to Glaxo Group Limited. Dispenser aid for aerosol containers. 286,816, 11-18-86, Cl. D24-62.000.
Nix, Herbert: *See*—
Scarperi, Franco; and Nix, Herbert, 286,813, Cl. D23-150.000.
Northern Telecom Limited: *See*—
Pushelberg, Floyd, 286,776, Cl. D14-60.000.
Okuda, Yasuhiro: *See*—
Serbinski, Andrew T.; and Okuda, Yasuhiro, 286,786, Cl. D16-31.000.
Okuyama, Tooru; and Hara, Kunio, to Kabushiki Kaisha Toshiba. Electronic copying machine. 286,785, 11-18-86, Cl. D16-31.000.
Okuyama, Tooru: *See*—
Sutoh, Shigeru; Okuyama, Tooru; and Hara, Kunio, 286,779, Cl. D14-109.000.
Ooba, Yasuhiro; Saito, Kazuhiko; and Yamamoto, Mitsuru, to Honda Giken Kogyo Kabushiki Kaisha. Four wheel vehicle. 286,760, 11-18-86, Cl. D12-87.000.
Ozburn-Janesville Corporation: *See*—
Furman, Donald D., 286,734, Cl. D8-41.000.
Paige, Edward. Orifice plate for a radiator valve. 286,807, 11-18-86, Cl. D23-34.000.
Parker, David A.: *See*—
Collyear, John G.; and Parker, David A., 286,780, Cl. D15-5.000.
Collyear, John G.; and Parker, David A., 286,781, Cl. D15-5.000.
Parker Pen (Benelux) B.V.: *See*—
Thompson, John; and Wacha, Martin E., 286,789, Cl. D19-48.000.
Parker Pen Company, The: *See*—
Booker, Brian A. J., 286,791, Cl. D19-51.000.
Pate, Harold T.: *See*—
Borsh, Richard J.; Ripley, Robert W.; and Pate, Harold T., 286,768, Cl. D13-30.000.
Pauser, Rodney M., to Honeywell Inc. Remote communications module. 286,773, 11-18-86, Cl. D14-52.000.
PepsiCo Inc.: *See*—
Schoultz, Sondra, 286,793, Cl. D20-1.000.
Pittway Corporation: *See*—
Gepner, Isadore; and Shaw, Arthur W., 286,769, Cl. D13-32.000.
Pope, Lowell K. Headset for bio-electronic equipment. 286,772, 11-18-86, Cl. D14-36.000.
Promade SA: *See*—
Gasser, Ruth, 286,710, Cl. D6-368.000.
Prouty, Robert E.; and Goodrich, Ronald W., to Hamilton Standard Controls, Inc. Electromagnetic relay housing. 286,765, 11-18-86, Cl. D13-12.000.
Public Safety Equipment, Inc.: *See*—
Menke, W. Kenneth; and Wagner, Thomas E., 286,756, Cl. D10-114.000.
Punako, Stephen: *See*—
Gallusser, David O.; MacAvoy, David W.; Frear, David L.; and Punako, Stephen, 286,766, Cl. D13-24.000.
Pushelberg, Floyd, to Northern Telecom Limited. Telephone set base. 286,776, 11-18-86, Cl. D14-60.000.
Quaker Oats Company, The: *See*—
Fisher, Robert C., 286,799, Cl. D21-140.000.
Simmons, Carl J., 286,796, Cl. D21-64.000.
Ralph McKay Limited: *See*—
Johnson, William M., 286,783, Cl. D15-29.000.
Rennels, Cyril L. Stove. 286,812, 11-18-86, Cl. D23-97.000.
Renovo Konsult AB: *See*—
Lundgren, Alvar; Lundgren, Anders; and Holmgren, Bertil, 286,759, Cl. D11-164.000.
Ricoh Company, Ltd.: *See*—
Serbinski, Andrew T.; and Okuda, Yasuhiro, 286,786, Cl. D16-31.000.
Ripley, Robert W.: *See*—
Borsh, Richard J.; Ripley, Robert W.; and Pate, Harold T., 286,768, Cl. D13-30.000.
Roczey, Edward L. Lap mounted adjustable tray. 286,711, 11-18-86, Cl. D6-406.000.
St. Louis Creek Trading Company: *See*—
Anderson, Susan; and Boxwell, Audrey A., 286,801, Cl. D21-166.000.
Saito, Kazuhiko: *See*—
Ooba, Yasuhiro; Saito, Kazuhiko; and Yamamoto, Mitsuru, 286,760, Cl. D12-87.000.
Samsonite Corporation: *See*—
Miles, Richard, 286,705, Cl. D3-72.000.
Scarperi, Franco; and Nix, Herbert, to U.S. Philips Corporation. Air cleaner. 286,813, 11-18-86, Cl. D23-150.000.
Schoultz, Sondra, to PepsiCo Inc. Vending machine for beverages or the like. 286,793, 11-18-86, Cl. D20-1.000.
Schriner, Michael J., to Data Grip, Inc. Stand for a desk top printer or the like. 286,715, 11-18-86, Cl. D6-462.000.
Schulein, Rolf-Gunter: *See*—
Hagedorn, Leonhard; and Schulein, Rolf-Gunter, 286,721, Cl. D6-553.000.
Schultz, Moses R., to Knoll International, Inc. Chaise longue. 286,709, 11-18-86, Cl. D6-361.000.
Serbinski, Andrew T.; and Okuda, Yasuhiro, to Ricoh Company, Ltd. Electrostatic copier. 286,786, 11-18-86, Cl. D16-31.000.
Shaw, Arthur W.: *See*—
Gepner, Isadore; and Shaw, Arthur W., 286,769, Cl. D13-32.000.

Simco Sales Service of Pennsylvania: *See*—
Drazen, Alan S., 286,731, Cl. D1-101.000.
Simco Sales Service of Pennsylvania, Inc.: *See*—
Drazen, Alan, 286,700, Cl. D1-102.000.
Simmons, Carl J., to Quaker Oats Company, The. Toy music box. 286,796, 11-18-86, Cl. D21-64.000.
Simmons Universal Corporation: *See*—
Brunner, Merlin A.; and Draheim, Harvey J., 286,718, Cl. D6-505.000.
Somers, Robert I., to Black & Decker Inc. Electric sander. 286,736, 11-18-86, Cl. D8-62.000.
Somers, Robert I., to Black & Decker, Inc. Electric air inflator. 286,782, 11-18-86, Cl. D15-7.000.
Somers, Robert I.: *See*—
House, Lawrence E., II; Somers, Robert I.; and Dziedzic, John M., 286,737, Cl. D8-62.000.
STC plc: *See*—
Bishop, Oliver H. S., 286,777, Cl. D14-62.000.
Strafella, Frank: *See*—
Whang, Young K., 286,724, Cl. D7-9.000.
Summers, William C. Display pyramid cube. 286,707, 11-18-86, Cl. D6-301.000.
Sutoh, Shigeru; Okuyama, Tooru; and Hara, Kunio, to Kabushiki Kaisha Toshiba. Storage device for image information storing/retrieving machine. 286,779, 11-18-86, Cl. D14-109.000.
Svagstroms Montage HB: *See*—
Larsson, Arne, 286,739, Cl. D8-353.000.
Larsson, Arne, 286,740, Cl. D8-353.000.
Swartz, Henry H.; and Swartz, Margie E. Holder for bingo sheets or the like. 286,795, 11-18-86, Cl. D21-54.000.
Swartz, Margie E.: *See*—
Swartz, Henry H.; and Swartz, Margie E., 286,795, Cl. D21-54.000.
Takara Co., Ltd.: *See*—
Maruyama, Masaki, 286,800, Cl. D21-160.000.
Yamano, Junji, 286,752, Cl. D10-35.000.
Tamura, Gen; Watanabe, Akira; and Kawaguchi, Yukinori, to Honda Giken Kogyo Kabushiki Kaisha. Motor tricycle. 286,761, 11-18-86, Cl. D12-110.000.
TBG Inc.: *See*—
Borsh, Richard J.; Ripley, Robert W.; and Pate, Harold T., 286,768, Cl. D13-30.000.
TeleQuest, Inc.: *See*—
Geis, Eric H.; Eisenstadt, Thomas P.; Kauffman, Kurt; and Lee, Robert E., 286,774, Cl. D14-56.000.
Thompson, John; and Wacha, Martin E., to Parker Pen (Benelux) B.V. Mechanical pencil. 286,789, 11-18-86, Cl. D19-48.000.
Thompson Manufacturing Company: *See*—
Jennison, James M.; and de Gelder, Jacob, 286,805, Cl. D23-6.000.
Tiffany and Company: *See*—
Loring, John R., 286,753, Cl. D10-39.000.
Turner Enterprises, Inc.: *See*—
Turner, Tommy P., 286,764, Cl. D12-300.000.
Turner, Tommy P., to Turner Enterprises, Inc. Utility boat. 286,764, 11-18-86, Cl. D12-300.000.
Tzifkansky, Guy; and Marchais, Jean-Claude, to Cidelcem, S.A. Food box with hinged lid. 286,729, 11-18-86, Cl. D7-76.000.
Tzifkansky, Guy; and Marchais, Jean-Claude, to Cidelcem, S.A. Compartmented food box with lid and shutters. 286,730, 11-18-86, Cl. D7-81.000.
U.S. Philips Corporation: *See*—
Scarperi, Franco; and Nix, Herbert, 286,813, Cl. D23-150.000.
Verholt, Johannes M., to B.V. Briefhouder-eu Papierwarenfabriek PAS. Modular cabinet for filing computer print-outs. 286,714, 11-18-86, Cl. D6-446.000.
W. H. Brine Co.: *See*—
Brine, William H., Jr., 286,803, Cl. D21-210.000.
Wacha, Martin E.: *See*—
Thompson, John; and Wacha, Martin E., 286,789, Cl. D19-48.000.
Wagner, Thomas E.: *See*—
Menke, W. Kenneth; and Wagner, Thomas E., 286,756, Cl. D10-114.000.
Watanabe, Akira: *See*—
Tamura, Gen; Watanabe, Akira; and Kawaguchi, Yukinori, 286,761, Cl. D12-110.000.
Westvaco Corporation: *See*—
Forbes, Hampton E., Jr., 286,745, Cl. D9-416.000.
Whang, Young K., to Strafella, Frank. Drinking mug. 286,724, 11-18-86, Cl. D7-9.000.
Willy, Erazm A. Combined speaker diaphragm and baffle therefor. 286,771, 11-18-86, Cl. D14-30.000.
Wittner, Ernest, to International Business Machines Corporation. Modular cartridge storage rack. 286,712, 11-18-86, Cl. D6-407.000.
Yamamoto, Mitsuru: *See*—
Ooba, Yasuhiro; Saito, Kazuhiko; and Yamamoto, Mitsuru, 286,760, Cl. D12-87.000.
Yamano, Junji, to Takara Co., Ltd. Toy robot watch. 286,752, 11-18-86, Cl. D10-35.000.
Yee, Lung T.: *See*—
Feinbloom, Richard E.; Levine, Melvin; and Yee, Lung T., 286,787, Cl. D16-130.000.
Yosimoto, Kenichirou, to Dream Sogo Kenkyusho. Headboard for a bed. 286,717, 11-18-86, Cl. D6-505.000.
Zanuso, Marco, to I.C.A. S.p.A. Industria Componenti per l'Architettura. Self-cleaning sanitary toilet. 286,817, 11-18-86, Cl. D25-16.000.
Zieff, Mark P., to Dart Industries, Inc. Tumbler or the like. 286,725, 11-18-86, Cl. D7-14.000.
501 Brillantleuchten AG: *See*—
Engel, Hartmut S., 286,818, Cl. D26-62.000.

LIST OF PLANT PATENTEES

Ball Pan Am Plant Company: *See*—
Fischer, Arnold, 5,806, Cl. 69.000.
Fischer, Arnold, to Ball Pan Am Plant Company. African Violet plant named Romeo. 5,806, 11-18-86, Cl. 69.000.
Flemer, William, III, to Treesearch. Flowering Crab Apple Tree. 5,800, 11-18-86, Cl. 34.000.
Gesellschaftsvertrag uber die Ergindergemeinschaft "Optimara": *See*—
Holtkamp, Reinhold, 5,805, Cl. 69.000.
Holtkamp, Reinhold, to Gesellschaftsvertrag uber die Ergindergemeinschaft "Optimara". African violet plant named Improved North Carolina. 5,805, 11-18-86, Cl. 69.000.
Kallert, Gunter. *Syngonium podophyllum* plant cv. 'Jenny Kallert'. 5,807, 11-18-86, Cl. 88.000.
Mikkelsen, James C., to Mikkelsens, Inc. Impatiens plant named Zenith. 5,804, 11-18-86 Cl. 68.000.
Mikkelsens, Inc.: *See*—
Mikkelsen, James C., 5,804, Cl. 68.000.
Monin, Andre ; and Trefois, Richard, to N.V. Jo Nicolai & Co. Cherry rootstock-GM9 cultivar. 5,801, 11-18-86, Cl. 37.000.
Monin, Andre ; and Trefois, Richard, to N.V. Jo Nicolai & Co. Cherry rootstock-GM 79 cultivar. 5,802, 11-18-86, Cl. 37.000.
Monin, Andre; and Trefois, Richard, to N.V. Jo Nicolai & Co. Cherry rootstock-GM G1/1 cultivar. 5,803, 11-18-86, Cl. 37.000.
N.V. Jo Nicolai & Co.: *See*—
Monin, Andre ; and Trefois, Richard, 5,801, Cl. 37.000.
Monin, Andre ; and Trefois, Richard, 5,802, Cl. 37.000.
Monin, Andre; and Trefois, Richard, 5,803, Cl. 37.000.
Treesearch: *See*—
Flemer, William, III, 5,800, Cl. 34.000.
Trefois, Richard: *See*—
Monin, Andre ; and Trefois, Richard, 5,801, Cl. 37.000.
Monin, Andre ; and Trefois, Richard, 5,802, Cl. 37.000.
Monin, Andre; and Trefois, Richard, 5,803, Cl. 37.000.

CLASSIFICATION OF PATENTS

ISSUED NOVEMBER 18, 1986

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

6 4,622,696
16 Re.32,287
23 4,622,697
49 R 4,622,698
114 4,622,699
425 4,622,700

CLASS 4

203 4,622,701
255 4,622,702
286 4,622,703
443 4,622,704

CLASS 5

93 R 4,622,705
453 4,622,706

CLASS 7

158 4,622,707

CLASS 8

107 4,623,356
4,623,357
158 4,622,708
620 4,623,358

CLASS 15

4 4,622,709
53 AB 4,622,710
250.23 4,622,711
250.36 4,622,712
312 R 4,622,713
316 R 4,622,714

CLASS 16

370 4,622,715
384 4,622,716

CLASS 17

32 4,622,717
49 4,622,718

CLASS 24

20 R 4,622,719
20 TT 4,622,720
68 CD 4,622,721
115 G 4,622,723
115 R 4,622,722
130 4,622,724
453 4,622,725
590 4,622,726
642 4,622,727

CLASS 26

18.5 4,622,728

CLASS 29

33 A 4,622,729
116 AD 4,622,730
159.3 4,622,731
421 R 4,622,732
564.4 4,622,733
568 4,622,734
571 4,622,735
4,622,736
4,622,737
576 B 4,622,738
622 4,622,739
715 4,622,740
858 4,622,741

CLASS 30

55 4,622,742
140 4,622,743
155 4,622,744
201 4,622,745
286 4,622,746
293 4,622,747
380 4,622,748
421 4,622,749

CLASS 33

1 H 4,622,750
169 C 4,622,751
185 R 4,622,752
189 4,622,753
356 4,622,754
444 4,622,755
556 4,622,756

CLASS 34

1 4,622,757
13 4,622,758
44 4,622,759
65 4,622,760
86 4,622,761
155 4,622,762

CLASS 36

50 4,622,763
68 4,622,764
120 4,622,765

CLASS 37

58 4,622,766

CLASS 40

120 4,622,767
124.1 4,622,768
152.1 4,622,769
491 4,622,770
547 4,622,771

CLASS 43

17.2 4,622,772
43.16 4,622,773
88 4,622,774

CLASS 44

51 4,623,359
57 4,623,360
4,623,361
4,623,362
4,623,363

CLASS 47

63 4,622,775
67 4,622,776
4,622,777

CLASS 49

161 4,622,778

CLASS 51

134.5 R 4,622,779
170 T 4,622,780
178 4,622,781
273 4,622,782
309 4,623,364
376 4,622,783

CLASS 52

2 4,622,784
11 4,622,785
58 4,622,786
4,622,787
79.11 4,622,788
95 4,622,789
169.5 4,622,790
241 4,622,791
263 4,622,792
403 4,622,794
648 4,622,795
747 4,622,796
785 4,622,797

CLASS 53

373 4,622,793
4,622,798
415 4,622,799
425 4,622,800
429 4,622,801
466 4,622,802

CLASS 55

131 4,623,365
216 4,623,366
385 R 4,623,367
387 4,623,368

CLASS 56

10.2 4,622,803
13.9 4,622,804
14.3 4,622,805
16.2 4,622,806
295 4,622,807

CLASS 60

39.29 4,622,808
274 4,622,809
286 4,622,810
303 4,622,811
398 4,622,812
522 4,622,813
555 4,622,814
602 4,622,815
606 4,622,816
608 4,622,817
624 4,622,818
657 4,622,819
673 4,622,820
757 4,622,821

CLASS 62

3 4,622,822
6 4,622,823
11 4,623,369
4,623,370
17 4,623,371
55 4,622,824
102 4,622,825
137 4,622,826
158 4,622,827
200 4,622,828
216 4,622,829
238.3 4,622,830
244 4,622,831
344 4,622,832
532 4,623,372

CLASS 65

2 4,623,373
83 4,623,374
163 4,623,375

CLASS 70

226 4,622,833
395 4,622,834

CLASS 71

92 4,623,376
4,623,377
4,623,378
4,623,379
4,623,380
94 4,623,381
4,623,382
100 4,623,383
105 4,623,384

CLASS 72

16 4,622,835
31 4,622,836
34 4,622,837
49 4,622,838
138 4,622,839
283 4,622,840
367 4,622,841
467 4,622,842

CLASS 73

1 E 4,622,843
1 G 4,622,844
24 4,622,845
59 4,622,846
61.4 4,622,847
146 4,622,848
152 4,622,849
182 4,622,850
292 4,622,851
597 4,622,853
703 4,622,854
4,622,855
727 4,622,856
744 4,622,857
861.38 4,622,858
865.6 4,622,852

CLASS 74

15.88 4,622,859
448 4,622,860
531 4,622,861
588 4,622,862
594.6 4,622,863
597 4,622,864
866 4,622,865
4,622,866
4,622,867

CLASS 75

10.18 4,623,386
53 4,623,385
232 4,623,388

CLASS 81

15.9 4,622,868
52 4,622,869
58.2 4,622,870

CLASS 82

1.2 4,622,871
2 R 4,622,872
4 R 4,622,873
24 R 4,622,874

CLASS 83

80 4,622,875
618 4,622,876

CLASS 84

1.01 4,622,877
1.03 4,622,879
1.24 4,622,878
317 4,622,880
464 R 4,622,881

CLASS 91

369 R 4,622,882
388 4,622,883
445 4,622,884
487 4,622,885
520 4,622,886

CLASS 98

66.1 4,622,887
115.3 4,622,888

CLASS 99

312 4,622,889
385 Re.32,288
450.2 4,622,890
450.4 4,622,891
533 4,622,892

CLASS 100

2 4,622,893
118 4,622,894

CLASS 101

153 4,622,895
316 4,622,897
416 R 4,622,896

CLASS 102

237 4,622,898
334 4,622,899
387 4,622,900
476 4,622,901

CLASS 105

377 4,622,902

CLASS 106

1.14 4,623,389
15.05 4,623,390
21 4,623,391
27 4,623,392
38.22 4,623,393
122 4,623,394
273 R 4,623,395
291 4,623,396
308 N 4,623,398
308 Q 4,623,397

CLASS 110

221 4,622,903
263 4,622,904
347 4,622,905

CLASS 111

84 4,622,906

CLASS 112

121.12 4,622,907
262.2 4,622,908
262.3 4,622,909
447 4,622,910

CLASS 114

71 4,622,911
123 4,622,912
280 4,622,913

CLASS 118

77 4,622,914
652 4,622,915
688 4,622,916
696 4,622,917
718 4,622,918
4,622,919

CLASS 119

1 4,622,920

CLASS 122

7 C 4,622,921
449 4,622,922

CLASS 123

2 4,622,923
3 4,622,924
41.25 4,622,925
52 MB 4,622,926
58 B 4,622,927
65 A 4,622,929
65 PE 4,622,928
179 K 4,622,930
190 A 4,622,931
192 R 4,622,932
196 R 4,622,933
197 AC 4,622,934
198 DC 4,622,935
399 4,622,936
407 4,622,937
413 4,622,938
425 4,622,939
432 4,622,940
4,622,941
446 4,622,942
502 4,622,943
557 4,622,944

CLASS 126

25 A 4,622,945
39 E 4,622,946
110 R 4,622,947
390 4,622,948
415 4,622,949
428 4,622,950
450 4,622,951

CLASS 128

1.3 4,622,952
4,622,953
6 4,622,954
20 4,622,955
57 4,622,956
78 4,622,957
79 4,622,958
92 VK 4,622,960
92 YZ 4,622,959
94 4,622,961
158 4,622,962
203.27 4,622,963
205.24 4,622,964
207.14 4,622,965
303.14 4,622,966
303.15 4,622,967
305.3 4,622,968
328 4,622,969
334 R 4,622,970
395 4,622,971
399 4,622,972
421 4,622,973
634 4,622,974
642 4,622,975
654 4,622,976
663 4,622,977
4,622,978
702 4,622,979
704 4,622,980
762 4,622,981

CLASS 131

297 4,622,982
365 4,622,983

CLASS 132

84 R 4,622,984
88.5 4,622,985
92 R 4,622,986

CLASS 134

3 4,623,399

CLASS 135

20 M 4,622,987

CLASS 136

244 4,623,751

CLASS 137

209 4,622,988
315 4,622,989
4,622,990
386 4,622,991
504 4,622,992
542 4,622,993
557 4,622,994
590 4,622,995
4,622,996
595 4,622,997
596.15 4,622,998
599 4,622,999
625.17 4,623,000
625.46 4,623,001
625.48 4,623,002
625.66 4,623,003

CLASS 139

384 B 4,623,004
452 4,623,005
4,623,006
4,623,007

CLASS 141

89 4,623,008

CLASS 148

6.35 4,623,400
13 4,623,401
20.3 4,623,402
33.3 4,623,403
101 4,623,404
105 4,623,405
111 4,623,406
4,623,407
403 4,623,408

CLASS 149

92 4,623,409

CLASS 152

380 4,623,009
450 4,623,010
451 4,623,011

CLASS 156

64 4,623,410
93 4,623,411
210 4,623,412
247 4,623,413
307.5 4,623,414
325 4,623,415
331.7 4,623,416
345 4,623,417
361 4,623,418
502 4,623,419
515 4,623,420
523 4,623,421
583.5 4,623,422
603 4,623,423
610 4,623,424
613 4,623,425
614 4,623,426
647 4,623,427

CLASS 160

243 4,623,012
345 4,623,013

CLASS 162

158 4,623,428
300 4,623,429

CLASS 164

7.1 4,623,014
312 4,623,015
425 4,623,016

CLASS 165

82 4,623,017
104.12 4,623,018
146 4,623,019

CLASS 166

88 4,623,020
250 4,623,021
273 Re.32,289
310 4,623,022

CLASS 169

39 4,623,023

CLASS 172

572 4,623,024

CLASS 174

35 GC 4,623,752
50 4,623,753
52 R 4,623,754
110 SR 4,623,755
158 F 4,623,756

CLASS 175

21 4,623,025

76 4,623,026
340 4,623,027
371 4,623,028

CLASS 177

137 4,623,029
210 FP 4,623,030

CLASS 178

18 4,623,757

CLASS 180

148 4,623,031
169 4,623,032

CLASS 181

120 4,623,033
148 4,623,034
274 4,623,035

CLASS 182

142 4,623,036
221 4,623,037
239 4,623,038

CLASS 185

39 4,623,039

CLASS 187

29 R 4,623,040
4,623,041
4,623,042

CLASS 188

2 F 4,623,043
72.1 4,623,044
79.5 GT 4,623,046
79.5 P 4,623,045
196 BA 4,623,047
272 4,623,048
281 4,623,049
340 4,623,050

CLASS 192

0.033 4,623,053
8 C 4,623,051
21.5 4,623,052
53 E 4,623,054
85 AA 4,623,055

CLASS 193

23 4,623,056

CLASS 198

381 4,623,057
382 4,623,058
452 4,623,059
495 4,623,060
805 4,623,061

CLASS 200

11 K 4,623,763
38 R 4,623,764
43.22 4,623,765
85 R 4,623,766
144 AP 4,623,767
159 B 4,623,768
250 4,623,769

CLASS 203

9 4,623,430
4,623,431
98 4,623,432

CLASS 204

1 R 4,623,433
1 T 4,623,434
148 4,623,435
149 4,623,436
157.47 4,623,437
168 4,623,438
192.2 4,623,439
231 4,623,440
298 4,623,441
300 EC 4,623,442
427 B1 4,128,458

CLASS 206

311 4,623,062
408 4,623,063
445 4,623,064

CLASS 208

67 4,623,443
92 4,623,444
108 4,623,445
113 4,623,446
187 4,623,447
262 4,623,448

CLASS 209

250 4,623,449

CLASS 210

87 4,623,450
4,623,451
104 4,623,452
143 4,623,453
150 4,623,454
168 4,623,455
4,623,456
237 4,623,457
238 4,623,458
242.3 4,623,459
321.1 4,623,460
445 4,623,461
496 4,623,462
500.29 4,623,463
616 4,623,464
632 4,623,465
634 4,623,466
652 4,623,467
749 4,623,468
751 4,623,469
787 4,623,470

CLASS 211

187 4,623,065
195 4,623,066

CLASS 212

188 4,623,067

CLASS 215

11 R 4,623,068
4,623,069
329 4,623,070

CLASS 219

10.41 4,623,770
10.55 R 4,623,771
69 D 4,623,773
69 M 4,623,772
78.13 4,623,774
120 4,623,775
121 L 4,623,777
121 LG 4,623,776
124.34 4,623,778
222 4,623,779
401 4,623,780
413 4,623,781

CLASS 220

337 4,623,071
443 4,623,072

CLASS 221

45 4,623,073
48 4,623,074

CLASS 222

95 4,623,075
482 4,623,076
517 4,623,077
615 4,623,078

CLASS 223

85 4,623,079
95 4,623,080

CLASS 225

105 4,623,081

CLASS 227

7 4,623,082
152 4,623,083
153 4,623,084

CLASS 228

49.3 4,623,085
123 4,623,086
176 4,623,087

CLASS 229

2.5 R 4,623,088

CLASS 234

114 4,623,089

CLASS 235

379 4,623,782

CLASS 236

49 4,623,090
52 4,623,091

CLASS 237

12.3 C 4,623,092
19 4,623,093

CLASS 239

109 4,623,094
311 4,623,095

CLASS 241

30 4,623,096
37.5 4,623,097
46.04 4,623,098
101 A 4,623,099

CLASS 242

25 R 4,623,100
45 4,623,101
71.8 4,623,103
107.4 R 4,623,104
198 4,623,105

CLASS 244

3.1 4,623,106
3.22 4,623,107
13 4,623,108
152 4,623,109

CLASS 248

27.1 4,623,110
68.1 4,623,102
97 4,623,111
153 4,623,112
311.2 4,623,113
415 4,623,114
479 4,623,115

CLASS 249

55 4,623,116
122 4,623,117

CLASS 250

201 4,623,784
207 4,623,785
214 A 4,623,786
221 4,623,787
227 4,623,788
4,623,789
231 SE 4,623,790
234 4,623,791
255 4,623,792
310 4,623,783
341 4,623,793
396 R 4,623,794
504 H 4,623,795
504 R 4,623,796
560 4,623,797

CLASS 251

30.01 4,623,118
163 4,623,119
223 4,623,120
306 4,623,121
328 4,623,122
340 4,623,123

CLASS 252

8.8 4,623,471
12.2 4,623,472
33.6 4,623,473
47.5 4,623,474
68 4,623,475
94 4,623,476
299.5 4,623,477
350 4,623,478
4,623,479
400.53 4,623,480
511 4,623,481
512 4,623,482
545 4,623,483

CLASS 254

350 4,623,124
420 4,623,125

CLASS 256

25 4,623,126
35 4,623,127
65 4,623,128

CLASS 260

408 4,623,487
410.7 4,623,488
424 4,623,489
505 P 4,623,490
544 F 4,623,491

CLASS 261

92 4,623,492
109 4,623,493
161 4,623,494

CLASS 264

1.5 4,623,495
1.7 4,623,496
40.6 4,623,497
65 4,623,498
83 4,623,499
162 4,623,500
171 4,623,501
176.1 4,623,502
302 4,623,503
566 4,623,504
570 4,623,505
573 4,623,506

CLASS 266

104 4,623,129
271 4,623,130
280 4,623,131

CLASS 267

34 4,623,132
53 4,623,133
124 4,623,134
140.1 4,623,135

CLASS 270

1.1 4,623,136

CLASS 271

160 4,623,137
170 4,623,138
272 4,623,139
305 4,623,140

CLASS 272

68 4,623,141
116 4,623,142
119 4,623,143
134 4,623,144
135 4,623,145
137 4,623,146

CLASS 273

1 E 4,623,147
1.5 A 4,623,148
63 A 4,623,149
362 4,623,150

CLASS 277

24 4,623,151
60 4,623,152
153 4,623,153

CLASS 279

1 L 4,623,154
19 4,623,155
106 4,623,156
110 4,623,191
123 4,623,157

CLASS 280

11.12 4,623,158
11.27 4,623,159
166 4,623,160
414.1 4,623,161
649 4,623,163
687 4,623,162
689 4,623,164
704 4,623,165
751 4,623,166
798 4,623,167
804 4,623,168

CLASS 281

45 4,623,169

CLASS 285

4 4,623,170
42 4,623,171
309 4,623,172
333 4,623,173

CLASS 292

1 4,623,174
40 4,623,175
74 4,623,176
87 4,623,177
173 4,623,178
201 4,623,179
264 4,623,180
336.3 4,623,181

CLASS 293

155 4,623,182

CLASS 294

86.4 4,623,183
87.1 4,623,184
87.28 4,623,185

CLASS 296

1 R 4,623,186
39 R 4,623,187
97 G 4,623,188
181 4,623,189
198 4,623,190

CLASS 297

216 4,623,192
284 4,623,193
316 4,623,194
437 4,623,195
464 4,623,196

CLASS 298

10 4,623,197

CLASS 299

4,623,198

CLASS 303

6 R 4,623,199
22 R 4,623,200

CLASS 307

117 4,623,798
260 4,623,799
261 4,623,800
272 A 4,623,801
297 4,623,802
475 4,623,803
476 4,623,804
602 4,623,805

CLASS 310

12 4,623,806
4,623,807
15 4,623,808
49 R 4,623,809
90 4,623,810
90.5 4,623,202
192 4,623,811
268 4,623,812
313 R 4,623,813
339 4,623,814

CLASS 313

113 4,623,815
275 4,623,817
408 4,623,818
432 4,623,819
466 4,623,820
478 4,623,821
487 4,623,816

CLASS 315

39 4,623,822
58 4,623,823
241 R 4,623,824
368 4,623,825

CLASS 318

254 4,623,826
341 4,623,827
696 4,623,828
793 4,623,829
798 4,623,830
799 4,623,831

CLASS 322

28 4,623,833

CLASS 323

258 4,623,834

CLASS 324

58.5 R 4,623,835
73 PC 4,623,836
77 R 4,623,837
142 4,623,838
158 P 4,623,839
208 4,623,840
223 4,623,841
245 4,623,842
309 4,623,843
320 4,623,844

CLASS 328

60 4,623,845
61 4,623,846
234 4,623,847

CLASS 330

23 4,623,832
286 4,623,848
287 4,623,849

CLASS 331

56 4,623,850
111 4,623,851
4,623,852

CLASS 333

151 4,623,853
173 4,623,854
195 4,623,855
205 4,623,856
219 4,623,857
255 4,623,858

CLASS 335

14 4,623,859
170 4,623,860
202 4,623,861
216 4,623,862
230 4,623,863
299 4,623,864

CLASS 336

65 4,623,865

CLASS 337

380 4,623,866

CLASS 338

32 R 4,623,867
160 4,623,868

CLASS 339

5 P 4,623,203
14 L 4,623,204
4,623,205
17 C 4,623,206
17 LC Re.32,290
17 LM 4,623,207
74 R 4,623,208
75 P 4,623,209
91 R 4,623,210
143 R 4,623,211
236 4,623,212
276 R 4,623,213

CLASS 340

19 R 4,623,869
52 F 4,623,870
310 A 4,623,871
347 DD 4,623,872
4,623,874
4,623,875
347 SY 4,623,873
539 4,623,876
572 4,623,877
628 4,623,878
686 4,623,879
723 4,623,880
750 4,623,881
760 4,623,882
825.005 4,623,885
825.01 4,623,883
825.05 4,623,884
825.5 4,623,886
825.57 4,623,887
826 4,623,888
870.37 4,623,889

CLASS 342

44 4,623,890
361 4,623,891
411 4,623,892

CLASS 343

700 MS 4,623,893
4,623,894
829 4,623,895

CLASS 346

1.1 4,623,896
75 4,623,897
76 PH 4,623,898
4,623,899
4,623,900
4,623,901
4,623,902
4,623,903
140 R 4,623,904
4,623,905
4,623,906

CLASS 350

3.77 4,623,214
3.85 4,623,215
6.8 4,623,216
96.10 4,623,217
96.20 4,623,220
96.23 4,623,218
138 4,623,223
321 4,623,221
331 T 4,623,222
351 4,623,219
410 4,623,224
421 4,623,225
427 4,623,226
430 4,623,227
609 4,623,228
623 4,623,229

CLASS 351

210 4,623,230

CLASS 354

21 4,623,231
173.1 4,623,232
229 4,623,233
286 4,623,234
312 4,623,235
318 4,623,236
403 4,623,237
406 4,623,238

CLASS 355

8 4,623,239
10 4,623,240
4,623,241
14 R 4,623,242
15 4,623,243
24 4,623,244
32 4,623,245
38 4,623,246
75 4,623,247

CLASS 356

41 4,623,248
124 4,623,249
316 4,623,250
328 4,623,251
338 4,623,252
375 4,623,253
381 4,623,254
389 4,623,255
394 4,623,256
401 4,623,257
432 4,623,258

CLASS 357

17 4,623,907
22 4,624,004
23.7 4,623,908
30 4,623,909
38 4,623,910
45 4,623,911
54 4,623,912

CLASS 358

11 4,623,913

14 4,623,914
22 4,623,915
50 4,623,916
80 4,623,917
118 4,623,918
4,623,919
122 4,623,920
143 4,623,921
160 4,623,922
166 4,623,923
4,623,924
183 4,623,925
188 4,623,926
213 4,623,927
4,623,928
214 4,623,929
222 4,623,930
227 4,623,931
4,623,932
228 4,623,933
261 Re.32,291
280 4,623,934
4,623,935
284 4,623,936
285 4,623,937
4,623,938
342 4,623,939

CLASS 360

10.3 4,623,940
18 4,623,941
75 4,623,942
78 4,623,943
84 4,623,944
96.3 4,623,946
96.5 4,623,945
109 4,623,947

CLASS 361

13 4,623,948
63 4,623,949
79 4,623,950
218 4,623,951
220 4,623,952
315 4,623,953

CLASS 362

72 4,623,954
135 4,623,955
148 4,623,956
200 4,623,957
267 4,623,958
293 4,623,959

CLASS 363

21 4,623,960

CLASS 364

147 4,623,961
200 4,623,962
300 4,623,963
401 4,623,964
408 4,623,965
461 4,623,966
483 4,623,967
500 4,623,968
505 4,623,969
513 4,623,971
513.5 4,623,970
519 4,623,978
526 4,623,972
4,623,973
551 4,623,974
560 4,623,975
571 4,623,976
577 4,623,977
715 4,623,979
724 4,623,980
736 4,623,981
788 4,623,982
900 4,623,983
4,623,984
4,623,985
4,623,986
4,623,987
4,623,988

CLASS 365

156 4,623,989
189 4,623,990

CLASS 367

133 4,623,991

CLASS 368

19 4,623,259
80 4,623,260
4,623,261
294 4,623,262

CLASS 369

6 4,623,992
33 4,623,993
44 4,623,994
77.2 4,623,995

CLASS 370

60 4,623,996
85 4,623,997
4,623,998

CLASS 371

37 4,623,999

CLASS 372

45 4,624,000
90 4,624,001

CLASS 373

40 4,624,002
120 4,624,003

CLASS 374

33 4,623,263
117 4,623,264
152 4,623,265
181 4,623,266

CLASS 376

254 4,623,508
258 4,623,507
268 4,623,509
272 4,623,510
4,623,511
364 4,623,512

CLASS 377

20 4,624,005
69 4,624,006

CLASS 378

4 4,624,007

CLASS 379

4,623,759
80 4,623,758
84 4,623,761
232 4,623,760
393 4,623,762

CLASS 381

43 4,624,008
4,624,009
4,624,010
4,624,011
51 4,624,012

CLASS 382

9 4,624,013

CLASS 384

53 4,623,201
125 4,623,267
511 4,623,268
548 4,623,269
576 4,623,270

CLASS 400

208 4,623,271
4,623,272
4,623,273
4,623,274
662 4,623,275

CLASS 402

80 R 4,623,276

CLASS 403

314 4,623,277
362 4,623,278

CLASS 404

93 4,623,279
94 4,623,280

CLASS 405

19 4,623,281
157 4,623,282
270 4,623,283

CLASS 407

38 4,623,284
41 4,623,285

CLASS 408

116 4,623,286
206 4,623,287

CLASS 409

84 4,623,288

CLASS 410

7 4,623,289

CLASS 411

350 4,623,290

CLASS 414

31 4,623,291
114 4,623,292
126 4,623,293
590 4,623,294
608 4,623,295
730 4,623,296

CLASS 415

118 4,623,297
139 4,623,298

CLASS 416

124 4,623,299
143 4,623,300

CLASS 417

54 4,623,301
89 4,623,302
238 4,623,303
312 4,623,304
365 4,623,305

CLASS 418

55 4,623,306

CLASS 420

41 4,623,387
470 4,623,513
555 4,623,514

CLASS 422

1 4,623,515
28 4,623,516
40 4,623,517
46 4,623,518
72 4,623,519
126 4,623,520
156 4,623,521

CLASS 423

22 4,623,522
242 4,623,523
245 4,623,524
275 4,623,525
277 4,623,526
306 4,623,527
320 4,623,528
328 4,623,529
331 4,623,530
347 4,623,531
362 4,623,532
573 G 4,623,533
593 4,623,534

CLASS 424

43 4,623,535
49 4,623,536
4,623,537
52 4,623,538
79 4,623,539
81 4,623,540
85 4,623,541

CLASS 425

8 4,623,307
117 4,623,308

CLASS 426

94 4,623,542
103 4,623,543
233 4,623,544
448 4,623,546
502 4,623,545
535 4,623,547
548 4,623,549
559 4,623,548
4,623,350
564 4,623,551
575 4,623,552

CLASS 427

2 4,623,553
8 4,623,554
34 4,623,555
41 4,623,556
44 4,623,557
4,623,558
54.1 4,623,559
184 4,623,560
275 4,623,561
296 4,623,562
379 4,623,563
393 4,623,564

CLASS 428

35 4,623,565
36 4,623,566
4,623,567
40 4,623,568
42 4,623,569
65 4,623,570
68 4,623,571
90 4,623,572
109 4,623,573
113 4,623,574
4,623,575
171 4,623,576
209 4,623,577
4,623,578
215 4,623,579
216 4,623,580
220 4,623,581
4,623,582
242 4,623,583
304.4 4,623,584
312.8 4,623,585
324 4,623,586
335 4,623,587
402.24 4,623,588
403 4,623,589
408 4,623,590
414 4,623,591
423.3 4,623,592
447 4,623,593
500 4,623,594
553 4,623,595

CLASS 429

26 4,623,596
101 4,623,597
162 4,623,598
174 4,623,599
223 4,623,600

CLASS 430

69 4,623,601
106 4,623,602
108 4,623,603
109 4,623,604
110 4,623,605
4,623,606
312 4,623,607
322 4,623,608
325 4,623,609
326 4,623,610
329 4,623,611
375 4,623,612
428 4,623,613
523 4,623,614
527 4,623,615
545 4,623,616
551 4,623,617

CLASS 431

170 4,623,309
261 4,623,310

CLASS 432

106 4,623,311

CLASS 434

224 4,623,312

CLASS 435

6 4,623,618
4,623,619
7 4,623,620
4,623,621
68 4,623,622
115 4,623,623
186 4,623,624
190 4,623,625
191 4,623,626
240 4,623,627

CLASS 436

13 4,623,628
518 4,623,629

CLASS 440

77 4,623,313
104 4,623,314
106 4,623,315

CLASS 441

4,623,316

CLASS 446

289 4,623,317
330 4,623,318
373 4,623,319
462 4,623,320

CLASS 455

168 4,624,014

CLASS 464

7 4,623,321
160 4,623,322

CLASS 493

338 4,623,323
462 4,623,324
468 4,623,325

CLASS 494

34 4,623,326

CLASS 501

127 4,623,630

CLASS 502

60 4,623,631
74 4,623,632
85 4,623,633
113 4,623,634
215 4,623,635
232 4,623,636
333 4,623,637
401 4,623,638

CLASS 514

18 4,623,639
4,623,640
58 4,623,641
84 4,623,642
196 4,623,643
4,623,644
200 4,623,645
212 4,623,486
220 4,623,646
228 4,623,647
291 4,623,648
292 4,623,649
312 4,623,650
326 4,623,652
342 4,623,651
383 4,623,653
4,623,654
399 4,623,655
437 4,623,656
462 4,623,657
482 4,623,658
508 4,623,659
514 4,623,660
575 4,623,661
596 4,623,662
648 4,623,663
653 4,623,664
678 4,623,665
754 4,623,666
762 4,623,667

CLASS 518

709 4,623,668
719 4,623,669

CLASS 521

61 4,623,670
92 4,623,671
108 4,623,672
110 4,623,673
137 4,623,674
180 4,623,675

CLASS 522

15 4,623,676

CLASS 523

122 4,623,677
335 4,623,678
410 4,623,679
412 4,623,680
468 4,623,681

CLASS 524

3 4,623,682
47 4,623,683
96 4,623,684
99 4,623,685
101 4,623,686
116 4,623,687
377 4,623,688
457 4,623,689
538 4,623,690
542 4,623,691
549 4,623,692
700 4,623,693
731 4,623,694
747 4,623,695

CLASS 525

33 4,623,696
54.11 4,623,484
61 4,623,697
221 4,623,698
355 4,623,699
478 4,623,700
523 4,623,701
528 4,623,702
535 4,623,703

CLASS 526

68 4,623,704
75 4,623,705
88 4,623,706
142 4,623,707
314 4,623,708

CLASS 528

65 4,623,709
176 4,623,710
375 4,623,711
498 4,623,712
930 4,623,713

CLASS 530

324 4,623,714
330 4,623,715
333 4,623,716
380 4,623,717
393 4,623,718

CLASS 534

636 4,623,719
700 4,623,720

CLASS 536

4.1 4,623,721
16.1 4,623,722
27 4,623,723

CLASS 540

92 4,623,485

CLASS 544

107 4,623,724
346 4,623,725

CLASS 546

168 4,623,726
178 4,623,727
236 4,623,728
256 4,623,729

CLASS 548

308 4,623,730
374 4,623,731
480 4,623,732
542 4,623,733
545 4,623,734

CLASS 549

206 4,623,735
369 4,623,736
471 4,623,737

CLASS 556

17 4,623,738
410 4,623,739
421 4,623,740
465 4,623,741

CLASS 558

81 4,623,742
105 4,623,743
170 4,623,744

CLASS 560

15 4,623,745
50 4,623,746
190 4,623,747
204 4,623,748
262 4,623,749

CLASS 568

822 4,623,750

CLASS 604

4 4,623,327
4,623,328
29 4,623,329
63 4,623,330
65 4,623,331
68 4,623,332
80 4,623,333
85 4,623,334
118 4,623,335
192 4,623,336
298 4,623,337
339 4,623,338
359 4,623,339
385 A 4,623,342
385 R 4,623,340
4,623,341
385.2 B1 4,490,148
405 4,623,343
407 4,623,344
892 4,623,345
896 4,623,346

CLASS 623

1 4,623,347
3 4,623,350
11 4,623,348
18 4,623,349
22 4,623,351
23 4,623,352
4,623,353
25 4,623,354
66 4,623,355

CLASSIFICATION OF DESIGNS

D1—	101	286,731		511	286,719			286,740	D12—	87	286,760	D15—	5	286,780		160	286,800
	102	286,700		521	286,720		373	286,741		110	286,761			286,781		166	286,801
D2—	24	286,701		553	286,721		381	286,742		128	286,762		7	286,782		191	286,802
		286,702	D7—	5	286,722		394	286,743		156	286,763		29	286,783		210	286,803
D3—	52	286,703		9	286,723		397	286,744		300	286,764		123	286,784		239	286,804
	71	286,704			286,724	D9—	302	286,746	D13—	12	286,765	D16—	31	286,785	D23—	6	286,805
	72	286,705		14	286,725			286,747		24	286,766			286,786		15	286,806
D4—	102	286,706		23	286,726		389	286,748			286,767		130	286,787		34	286,807
D6—	301	286,707		54	286,727			286,749		30	286,768	D18—	4	286,788		52	286,810
	361	286,708		76	286,728		416	286,745		32	286,769	D19—	48	286,789		55	286,808
		286,709			286,729		423	286,750		40	286,770		50	286,790			286,809
	368	286,710		81	286,730	D10—	2	286,751	D14—	30	286,771		51	286,791			286,811
	406	286,711		319	286,732		35	286,752		36	286,772		75	286,792		97	286,812
	407	286,712		357	286,733		39	286,753		52	286,773	D20—	1	286,793		150	286,813
	416	286,713	D8—	41	286,734			286,754		56	286,774		41	286,794	D24—	17	286,814
	446	286,714		50	286,735			286,755		59	286,775	D21—	54	286,795		21	286,815
	462	286,715		62	286,736		114	286,756		60	286,776		64	286,796		62	286,816
	496	286,716			286,737	D11—	18	286,757		62	286,777		66	286,797	D25—	16	286,817
	505	286,717		91	286,738		43	286,758		64	286,778		104	286,798	D26—	62	286,818
		286,718		353	286,739		164	286,759		109	286,779		140	286,799	D34—	19	286,819

CLASSIFICATION OF PLANTS

P.—	34	5,800		5,802										
	37	5,801		5,803		68	5,804		69	5,805		5,806	88	5,807

GEOGRAPHICAL INDEX
OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 :	4,623,419		4,623,180		4,623,844		4,623,983		4,622,938	20 :	4,622,746
	4,623,528		4,623,181		4,623,858		4,623,987		4,622,952		4,622,945
	4,623,762		4,623,186		4,623,862		4,623,988		4,622,953		4,623,148
04 :	4,622,775		4,623,195		4,623,867		4,623,997		4,622,956	21 :	4,622,722
	4,622,898		4,623,206		4,623,890	10 :	4,623,221		4,623,069		4,622,875
	4,622,950		4,623,219		4,623,894	11 :	4,623,175		4,623,089		4,623,061
	4,623,136		4,623,223		4,623,928	12 :	4,622,766		4,623,141		4,623,680
	4,623,165		4,623,225		4,623,934		4,622,772		4,623,211		4,623,780
	4,623,458		4,623,248		4,623,951		4,622,807		4,623,282		4,623,817
	4,623,467		4,623,252		4,623,956		4,622,838		4,623,308	22 :	4,622,705
	4,623,776		4,623,255		4,623,982		4,622,951		4,623,313		4,622,912
	4,623,841		4,623,288		4,623,990		4,622,958		4,623,319		4,622,959
	4,623,846		4,623,289		4,623,996		4,622,979		4,623,327		4,623,026
	4,623,856		4,623,318		4,624,000		4,623,040		4,623,354		4,623,360
06 :	Re.32,287		4,623,335		4,624,006		4,623,145		4,623,432		4,623,361
	4,622,700		4,623,337		4,624,008		4,623,224		4,623,435		4,623,362
	4,622,703		4,623,352		4,624,014		4,623,328		4,623,448		4,623,363
	4,622,707		4,623,365	08 :	4,623,160		4,623,441		4,623,497		4,623,529
	4,622,732		4,623,367		4,623,244		4,623,511		4,623,500		4,623,630
	4,622,738		4,623,384		4,623,267		4,623,696		4,623,516	23 :	4,623,062
	4,622,751		4,623,395		4,623,315		4,623,753		4,623,546		4,623,100
	4,622,770		4,623,401		4,623,390		4,623,761		4,623,549	24 :	4,622,742
	4,622,813		4,623,426		4,623,445		4,623,878		4,623,560		4,622,852
	4,622,817		4,623,444		4,623,622		4,623,953		4,623,632		4,622,944
	4,622,824		4,623,474	09 :	4,622,808		4,623,999		4,623,661		4,622,970
	4,622,834		4,623,478		4,622,821	13 :	4,622,699		4,623,760		4,623,249
	4,622,861		4,623,513		4,622,854		4,622,787		4,623,765		4,623,514
	4,622,878		4,623,518		4,622,855		4,622,836		4,623,774		4,623,558
	4,622,881		4,623,523		4,622,877		4,622,924		4,623,787		4,623,631
	4,622,896		4,623,564		4,622,961		4,622,983		4,623,833		4,623,666
	4,622,897		4,623,573		4,623,012		4,623,002		4,623,834		4,623,681
	4,622,906		4,623,601		4,623,038		4,623,072		4,623,860		4,623,721
	4,622,960		4,623,627		4,623,097		4,623,144		4,623,874	25 :	4,622,739
	4,622,963		4,623,633		4,623,204		4,623,170	18 :	4,622,835		4,622,740
	4,622,966		4,623,636		4,623,228		4,623,177		4,622,859		4,622,755
	4,622,972		4,623,673		4,623,235		4,623,185		4,622,902		4,622,812
	4,622,975		4,623,711		4,623,259		4,623,279		4,623,064		4,622,946
	4,622,981		4,623,717		4,623,300		4,623,461		4,623,093		4,623,109
	4,622,989		4,623,735		4,623,309		4,623,469		4,623,152		4,623,121
	4,622,999		4,623,758		4,623,322		4,623,544		4,623,208		4,623,147
	4,623,027		4,623,778		4,623,420		4,623,891		4,623,297		4,623,236
	4,623,029		4,623,782		4,623,486	16 :	4,622,785		4,623,374		4,623,241
	4,623,037		4,623,784		4,623,505		4,623,548		4,623,482		4,623,465
	4,623,059		4,623,786		4,623,552		4,623,550		4,623,764		4,623,484
	4,623,073		4,623,788		4,623,591	17 :	4,622,718		4,623,913		4,623,575
	4,623,076		4,623,797		4,623,650		4,622,729		4,623,925		4,623,588
	4,623,106		4,623,799		4,623,667		4,622,745	19 :	4,622,947		4,623,589
	4,623,113		4,623,802		4,623,725		4,622,778		4,623,067		4,623,594
	4,623,119		4,623,803		4,623,728		4,622,803		4,623,118		4,623,732
	4,623,120		4,623,805		4,623,746		4,622,805		4,623,159		4,623,757
	4,623,123		4,623,824		4,623,861		4,622,822		4,623,179		4,623,896
	4,623,156		4,623,837		4,623,865		4,622,850		4,623,431		4,623,923
	4,623,178		4,623,843		4,623,957		4,622,920		4,623,664		4,623,981

26 : 4,622,698
4,622,725
4,622,753
4,622,842
4,622,843
4,622,851
4,622,853
4,622,862
4,622,864
4,622,871
4,622,887
4,622,939
4,622,994
4,623,015
4,623,023
4,623,031
4,623,045
4,623,047
4,623,054
4,623,056
4,623,063
4,623,122
4,623,164
4,623,196
4,623,229
4,623,286
4,623,414
4,623,498
4,623,502
4,623,597
4,623,644
4,623,678
4,623,694
4,623,706
4,623,736
4,623,737
4,623,756
4,623,775
4,623,811
4,623,954
4,623,961
27 : 4,622,747
4,622,780
4,622,781
4,622,857
4,622,880
4,622,890
4,622,973
4,622,995
4,622,996
4,623,266
4,623,280
4,623,392
4,623,412
4,623,418
4,623,542
4,623,570
4,623,676
4,623,809
29 : 4,622,889
4,623,048
4,623,051
4,623,150
4,623,295
31 : 4,622,984
4,623,078
4,623,101
4,623,129
4,623,822
4,623,859
4,623,919
32 : 4,623,451
33 : 4,623,143
4,623,503
4,623,958
34 : 4,622,776
4,622,794
4,622,873
4,622,891
4,622,917
4,622,987
4,623,083
4,623,163
4,623,230
4,623,257
4,623,336
4,623,340
4,623,353
4,623,355
4,623,357
4,623,373
4,623,376
4,623,379
4,623,400
4,623,427
4,623,446
4,623,483
4,623,536
4,623,538
4,623,539
4,623,540
4,623,547
4,623,556
4,623,574
4,623,577
4,623,583
4,623,608
4,623,621
4,623,629
4,623,645
4,623,652
4,623,657
4,623,662
4,623,663
4,623,687
4,623,688
4,623,708
4,623,726
4,623,729
4,623,738
4,623,749
4,623,779
4,623,888
4,623,911
4,623,912
4,623,915
4,623,916
4,623,421
4,622,984
4,623,078
4,623,101
4,623,129
4,623,822
4,623,859
4,623,919
4,623,451
4,623,143
4,623,503
4,623,958
4,622,776
4,622,794
4,622,873
4,622,891
4,622,917
4,622,987
4,623,083
4,623,163
4,623,230
4,623,257
4,623,336
4,623,340
4,623,353
4,623,355
4,623,357
4,623,373
4,623,376
4,623,379
4,623,400
4,623,427
4,623,446
4,623,483
4,623,536
4,623,538
4,623,539
4,623,540
4,623,547
4,623,556
4,623,574
4,623,577
4,623,583
4,623,608
4,623,621
4,623,629
4,623,645
4,623,652
4,623,657
4,623,662
4,623,663
4,623,687
4,623,688
4,623,708
4,623,726
4,623,729
4,623,738
4,623,749
4,623,779
4,623,888
4,623,911
4,623,912
4,623,915
4,623,916
4,623,921
4,623,924
4,623,960
35 : 4,623,409
36 : 4,622,723
4,622,752
4,622,768
4,622,769
4,622,782
4,622,799
4,622,870
4,622,914
4,622,932
4,623,043
4,623,079
4,623,084
4,623,086
4,623,088
4,623,091
4,623,102
4,623,111
4,623,146
4,623,158
4,623,239
4,623,271
4,623,301
4,623,323
4,623,324
4,623,326
4,623,339
4,623,348
4,623,359
4,623,388
4,623,411
4,623,456
4,623,464
4,623,537
4,623,554
4,623,569
4,623,579
4,623,593
4,623,606
4,623,611
4,623,634
4,623,700
4,623,716
4,623,759
4,623,835
4,623,849
4,623,887
4,623,892
4,623,906
4,623,918
4,623,929
4,623,977
4,624,004
37 : 4,623,071
4,623,174
4,623,184
4,623,438
4,623,656
4,623,810
4,623,826
4,623,964
38 : 4,622,884
39 : 4,622,767
4,622,771
4,622,791
4,622,844
4,622,858
4,622,860
4,622,955
4,623,013
4,623,019
4,623,050
4,623,074
4,623,077
4,623,103
4,623,108
4,623,149
4,623,162
4,623,169
4,623,258
4,623,329
4,623,333
4,623,372
4,623,391
4,623,413
4,623,462
4,623,470
4,623,473
4,623,476
4,623,506
4,623,508
4,623,525
4,623,599
4,623,600
4,623,635
4,623,671
4,623,677
4,623,682
4,623,684
4,623,713
4,623,744
4,623,808
4,623,816
4,623,829
4,623,897
4,623,971
4,128,458
40 : Re.32,289
4,622,846
4,622,993
4,623,399
4,623,443
4,623,455
4,623,489
4,623,521
4,623,669
4,623,952
41 : 4,622,736
4,623,124
4,623,316
4,623,819
42 : Re.32,290
4,622,714
4,622,730
4,622,819
4,622,840
4,622,845
4,622,905
4,622,957
4,622,962
4,622,965
4,622,980
4,622,992
4,623,132
4,623,197
4,623,220
4,623,245
4,623,265
4,623,269
4,623,293
4,623,296
4,623,366
4,623,389
4,623,422
4,623,510
4,623,530
4,623,534
4,623,535
4,623,555
4,623,559
4,623,578
4,623,585
4,623,697
4,623,747
4,623,752
4,623,781
4,623,793
4,623,795
4,623,820
4,623,823
4,623,828
4,623,850
4,623,879
4,623,936
4,623,949
4,623,979
43 : 4,623,955
44 : 4,623,866
45 : Re.32,288
4,623,356
4,623,532
4,623,883
46 : 4,622,774
47 : 4,622,974
4,623,065
4,623,277
4,623,675
48 : 4,622,704
4,622,763
4,622,777
4,622,832
4,622,833
4,622,849
4,622,869
4,622,967
4,622,976
4,623,003
4,623,020
4,623,021
49 : 4,623,825
51 : 4,622,792
4,622,911
4,623,142
4,623,172
4,623,452
4,623,659
4,623,763
4,623,886
4,623,976
4,624,009
53 : 4,622,757
4,622,820
4,622,913
4,622,986
4,623,161
4,623,212
4,623,312
4,623,472
54 : 4,623,487
4,623,674
55 : 4,622,702
4,622,837
4,622,863
4,622,894
4,622,935
4,623,068
4,623,115
4,623,125
4,623,171
4,623,338
4,623,341
4,623,410
4,623,576
4,623,683
4,623,768
4,623,910
56 : 4,623,024
4,623,881

DESIGN PATENTS

01 : 286,744
04 : 286,746
05 : 286,728
06 : 286,711
286,738
286,748
286,749
286,763
286,772
286,774
286,804
286,805
08 : 286,784
09 : 286,747
10 : 286,745
12 : 286,733
286,762
286,794
286,795
286,815
17 : 286,719
286,810
286,811
18 : 286,765
19 : 286,713
24 : 286,706
25 : 286,725
286,803
286,814
26 : 286,707
286,741
286,764
27 : 286,773
29 : 286,716
286,756
34 : 286,712
286,750
35 : 286,797
36 : 286,701
286,702
286,722
286,727
286,753
286,766
286,769
286,771
286,775
286,786
286,787
286,793
286,796
286,799
286,807
37 : 286,736
286,737
286,743
286,782
39 : 286,715
286,768
42 : 286,700
286,709
286,731
286,812
286,819
47 : 286,703
286,704
48 : 286,778
53 : 286,792
55 : 286,718
286,734
286,789

PLANT PATENTS

12 : 5,807
34 : 5,800
39 : 5,804

U.S. GOVERNMENT PRINTING OFFICE : O—1986

CHANGE OF ADDRESS FORM

NAME—FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

PLEASE PRINT OR TYPE

(or) COUNTRY

Mail this form to: NEW ADDRESS

Superintendent of Documents
Government Printing Office SSOM
Washington, D.C. 20402

Attach last subscription label here.

SUBSCRIPTION ORDER FORM

SUBSCRIPTION ORDER FORM

ENTER MY SUBSCRIPTION TO:

@ $ Domestic; @ $ Foreign.

NAME—FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

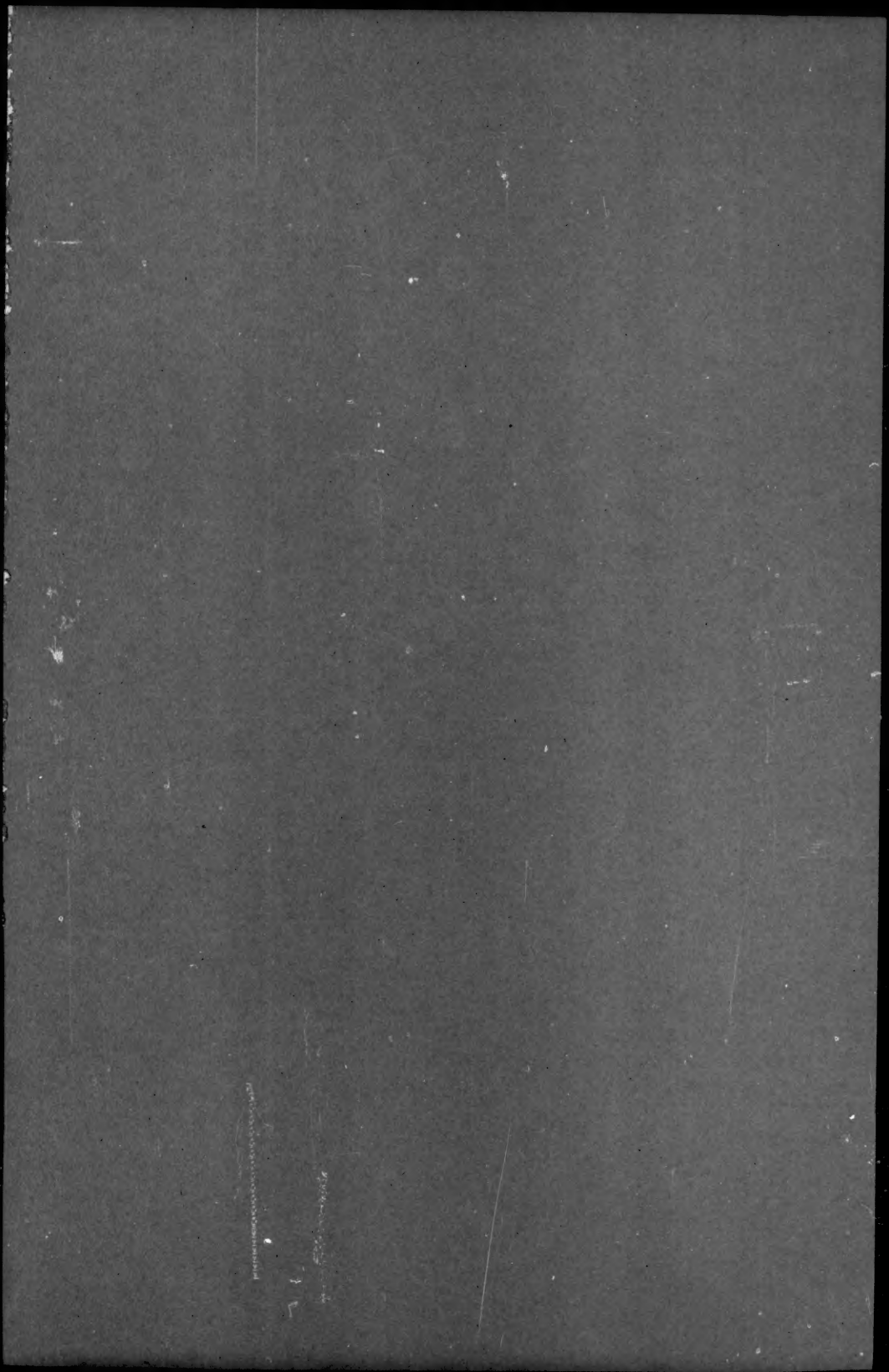
PLEASE PRINT OR TYPE

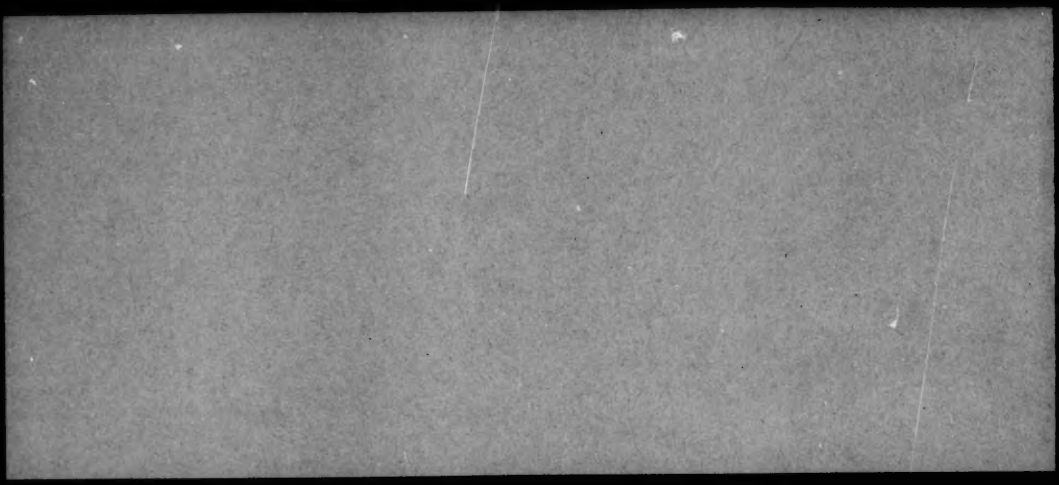
(or) COUNTRY

☐ Remittance Enclosed (Make checks payable to Superintendent of Documents)

☐ Charge to my Deposit Account No. .....

MAIL ORDER FORM TO:
Superintendent of Documents
Government Printing Office
Washington, D.C. 20402





U.S. DEPARTMENT OF COMMERCE
Malcolm Baldrige, *Secretary*
PATENT AND TRADEMARK OFFICE
Donald J. Quigg, *Commissioner*